FOREST MANAGEMENT CHARACTERISTICS, ATTITUDES, AND OBJECTIVES OF PRIVATE NON-INDUSTRIAL LANDOWNERS IN EASTERN OKLAHOMA

By

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INTRODUCTION

Currently much attention is given to the private non-industrial forestland owners in this country primarily because they control so much of the nation's timber resource base. Private non-industrial landowners own 70 percent of all forest land in the South and 80 percent of all forestland in Oklahoma. Furthermore, 70 percent of Oklahoma's commercial timberland is in this same ownership category (Sternitzke, 1968).

Clearly, private non-industrial landowners play a significant role in wood fiber supply and will continue to do so. However, fiber output per acre from private non-industrial forestland is small relative to the timber production on industry and government forests (Murphy, 1977). Currently, there is controversy among professional foresters as to whether private non-industrial timber growth could or should be increased. This concern for increased yield presumes landowners of this category to be operating under single-goal management. Whereas, multiple-goal management may be the more realistic scenario for measuring management quality and intensity. Porterfield (1977, p. 2) points out that, "Low management intensity is still the rule on most small forest land ownerships". Reaction toward this fact, by those interested in timber supply, is to pour more money and effort into intensifying timber management on these lands. But to be effective, efforts aimed at

affecting or aiding private non-industrial resource management must match their objectives. Therefore, it is essential that professional resource managers be aware of these objectives.

More precise knowledge of private non-industrial forestland owner's behavior and objectives provides information for improved fiber supply and demand projections. It has been shown that ownership patterns directly effect current and future availability of wood fiber (McComb, 1975). This relationship is particularly significant considering timber production's lag-time. McComb discovered in Georgia that the majority of private non-industrial landowners controlling most of the commercial forestland were absentees whose incomes did not depend on their land. The result, "Returns normally only supplement their incomes, and many hold woodland mostly for the many pleasures it brings" (McComb, 1975, p. 225).

Other socioeconomic characteristics (e.g., income, education, land tenure) have a similar fiber supply impact, for example ownership size. Small tracts containing commercial timber suffer from diseconomies of scale in timber production. Kingsley (1976) discovered that 58 percent of the private non-industrial commercial forest of southern New England is in ownerships of less than 10 acres (Kingsley, 1976). He concluded that this ownership pattern would preclude commercial timber utilization on private non-industrial forests.

As for forest management incentive programs, private non-industrial landowner education is seen as the key to any improvements in fiber outputs from these lands (Glascock, 1977). But on whom should these educational programs be focused or on what geographical regions should they be concentrated? And, at what educational level should

these programs be geared? Knowledge of landowner's socioeconomic characteristics and attitudes will provide insight for constructing realistic incentive programs.

Another significant improvement resulting from landowner studies involves the interface of research and information systems with landowner goals and objectives. Up-to-date, accurate landowner information enables research and information institutions to better adapt their programs to landowner needs. Without this information, these institutions may have the right answer for the wrong problem. Indeed knowledge of landowner characteristics, attitudes, and management objectives benefits both landowners and those interested in their resources.

Private non-industrial landowner studies have been conducted in numerous states, e.g., Alabama (Somberg, 1971), Delaware (Kingsley and Finley, 1975), Georgia (Holemo and Dyson, 1971), Idaho (Frazer, 1960), Louisiana (Carothers and Smith, 1977), Michigan (Schallau, 1964), Mississippi (Moak, 1973), Pennsylvania (Larsen and Gansner, 1972), West Virginia (Christensen, 1966). Still nothing is known of Oklahoma's private non-industrial forestland owner. It is the intent of this research to provide such knowledge.

The objectives of this research are to:

1. Identify the characteristics and attitudes of the private non-industrial forest owner in Oklahoma.

2. Determine and categorize the current level of timber management of those involved in using timber as a commercial resource.

3. Determine the landowner's future objectives and plans for timber management and marketing.

4. Identify relationships and trends involved with the timber resource and its non-industrial private forest owners.

CHAPTER II

METHODS AND PROCEDURE

Introduction

Oklahoma is a state of great geographical variety. The eastern portion of the State is best described as the western edge of the Eastern forest. The central portion is a vegetation transition zone between forest and prairie, commonly called the cross timbers area. The western half of the state is typified by plains and prairie of the Central United States. The natural range of most commercial timber species is limited to the eastern areas of the state, and the wood market generally follows this same pattern. Thus, the Forest Service presently limits its Forest Survey to the 17 eastern counties shown in Figure 1 (Murphy, 1977). This research is limited to the private non-industrial landowners in these 17 eastern counties.

Population: Total and Grouped

This 17 county area encompasses a variety of economies, land uses, population densities, and history. The amount of commercial forestland and commercial forestry activity also varies greatly among counties in this area (Table I). G. H. Weaver (1976) delineated southern counties and parishes into homogeneous groups by socioeconomic characteristics, urbanization, industrialization, etc. (Table II). These groupings were

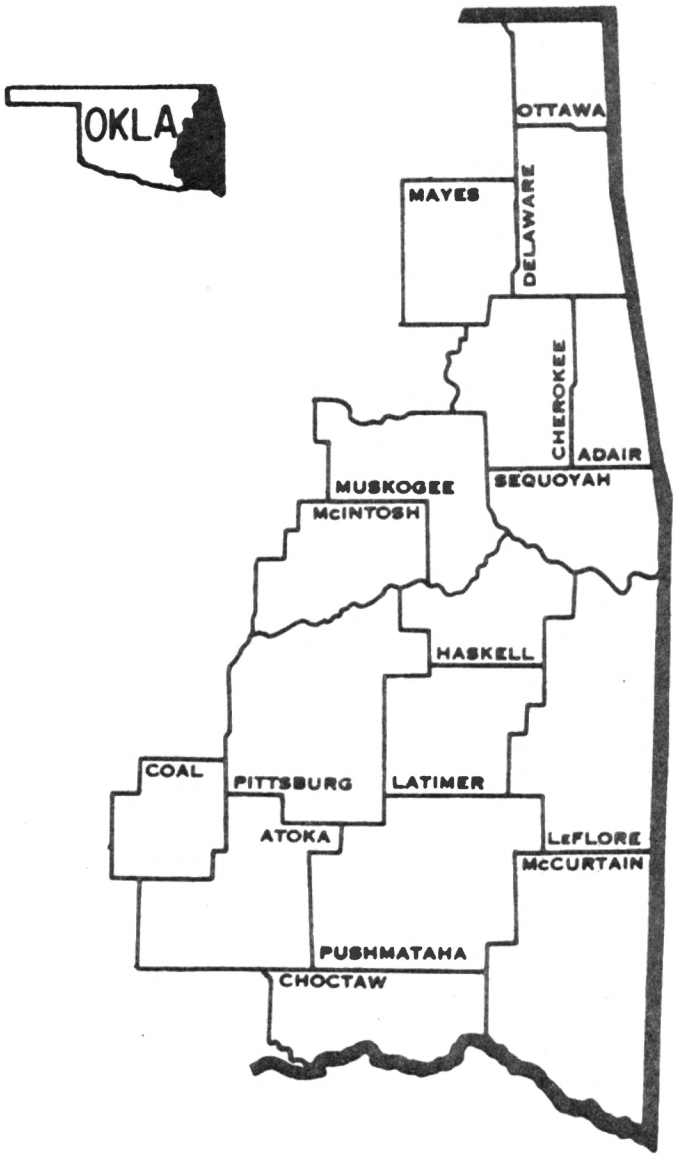

Figure 1. The 17 County Region Surveyed

Sources:

TABLE I

COMMERCIAL FOREST LAND BY OWNERSHIP CLASS, 1976

County	All ownerships	National forest	Other public	Forest industry	Farmer	Misc. private
	- - - - - - - - - - - - - - Thousand acres- - - - - - - - - - - - - -					
Adair	216.0	...	23.1	...	82.2	110.7
Atoka	270.0	...	19.9	...	132.8	117.3
Bryan	88.5	...	1.5	...	45.4	41.6
Cherokee	233.7	...	61.6	...	100.3	71.8
Choctaw	162.0	...	16.5	...	65.0	80.5
Coal	49.0	...	1.6	...	27.0	20.4
Delaware	195.2	...	32.1	...	125.3	37.8
Haskell	115.3	...	5.6	...	31.8	78.1
Latimer	282.0	...	15.7	12.0	23.1	231.2
LeFlore	577.5	176.5	13.9	104.5	74.1	208.5
McCurtain	820.8	42.3	43.3	567.0	57.2	111.0
McIntosh	88.0	...	19.3	...	37.7	31.0
Mayes	99.2	...	11.2	...	36.4	51.6
Muskogee	82.8	...	16.2	...	4.5	62.1
Ottawa	58.4	...	2.5	...	21.4	34.5
Pittsburg	174.0	...	19.1	...	11.4	143.3
Pushmataha	706.8	...	32.1	...	137.1	229.8
Sequoyah	104.0	...	8.6	...	82.6	12.8
All counties	4,323.4	218.8	343.8	991.3	1,095.5	1,674.0

Source: Earles, 1975, p. 4.

TABLE II

SELECTED WEST GULF REGION COUNTY AND PARISH GROUPINGS

Group Number	Description	Counties
1	High Industrial Ownerships	McCurtain
2	Mountain Forest Ownerships	Adair Cherokee Delaware Latimer LeFlore
3	Low Agriculture Income Ownerships	Atoka Choctaw Coal Haskell McIntosh Pushmataha
4	Medium Agriculture Income Ownerships	Muskogee
5	Non-Farm, Non-Industrial Forest Ownerships	Ottawa Pittsburg
6	Urban County Ownerships	Mayes Sequoyah

Source: Weaver, 1976.

adopted in this survey for subsequent analysis and comparison to add to the description of Oklahoma's private non-industrial landowners.

Sample: a Geograhpic Basis

In surveying this population, several decisions had to be made. The first involved the survey method, i.e., whether to survey on a census or sample basis. Census surveys have the advantage of retrieving responses from nearly all of the population. But this survey approach entails considerable expense, to the point of exceeding most research budgets. One such survey was conducted in northern Idaho in 1959 where nearly all 7000 private non-industrial forest owners were contacted through a series of mail questionnaires (Frazer, 1960).

Besides cost, geographic distribution of the survey population should be considered when deciding between a census or sample survey. The degree to which the population is geographically confined can make census surveys viable, when non-response bias is expected to be a major problem. Considering the diffuse distribution of private non-industrial landowners, budget constraints, and the precedence and improved techniques of sample surveys, sampling was adopted for this research. Sample surveys are by far the most widely used in research such as this, e.g. (Somberg, 1971; Kingsley and Finley, 1975; Moak, 1973; Larsen and Gansner, 1972; Schallau, 1964) and many others.

The next decision was to determine the basis on which to sample, i.e., a landowner or land area basis. It was viewed that more useful information stems from major economic effects. Under the present forestry activities of private non-industrial forest owners, owners of

larger landholdings have greater operational latitude and therefore greater individual economic input. In other words, larger resource control imputes larger economic control, in a marginal sense.

Another important consideration is the sample frame. Samples, selecting on a landowner basis, must draw from the entire list of landowners. Whereas sampling on a land area basis requires a list of only those owners of the randomly selected geographic plots. This fact can often make random samples of landowners more expensive than land area samples depending on the accessibility of landowner names and addresses. From this reasoning, a land area sample was elected. One such sample was taken in Delaware in 1974 (Kingsley and Finley, 1975) in which the landowner selection rationale was from forest plots, not landowner tax records. Landowner information obtained on this basis relates well with data from forest inventories which are also gathered from a random land or forest plot.

Having decided to conduct the survey by a land area sample of private non-industrial landowners of the 17 counties, the next problem is to decide what sample size is desirable and attainable. Land descriptions were secured for each of the 17 counties (Figure 1). Through use of a computer program for sampling, a stratified random sample was drawn, providing a list of approximately 1500 10 acre plots. This represents a land area sample size of 0.23 percent.

To meet this sample goal, it was necessary to travel to each county seat and identify the landowners of each of the 1500 plots. In some counties the Soil Conservation Service had up-to-date landownership maps giving names and addresses. In others, maps were out-of-date,

forcing use of county tax records. Approximately 500 plots were eliminated because they were not owned by private non-industrial landowners. There were 758 landowners representing the remaining 1000 plots.

Because this researcher's approach is to obtain sample statistics of landowner parameters on a land area basis, it was necessary to weight each landowner response by the number of 10 acre plots falling on the ownership. For example, if one landowner owned the land on which three sample 10 acre plots were located, he would receive a weight of three. By using this weighting procedure, results can be presented as follows:

1. Owners of a percentage of the land area who manage in a certain way, have certain socioeconomic characteristics, etc.
2. Characteristics, attitudes, and objectives of the owner of the average acre.

Developing the Questionnaire

The primary objective of any questionnaire is to return the most accurate, unbiased information possible. To accomplish this objective, much work went into question wording, organization for maintaining respondent interest, and personalization for brevity. Questions asking for acreages, activities, and motivations are relatively easy to construct. But questions attempting to measure attitudes and even objectives are subject to biased interviewer interpretation, inaccuracies, and incomplete representative information. A variety of scales exist for measuring attitudes, some have very limited uses,

i.e., semantic differential and paired comparisons. But the Likert scale of attitudinal measure is quite versatile and has much precedence in application (Hughes, 1967). This scale was used to measure landowner attitudes toward common commercial forest management practices. To provide a quantifiable measure of owner's land management objectives, a continuous scale was used (Oehrtman, 1975). Landowners were asked to score their chances of beginning commercial forest management and of planting trees in the next five years, using a scale from zero to 100, where zero indicates no chance and 100 complete certainty (Appendix A).

Data Collection: Mail and Telephone Survey

Three different media exist for collecting survey data: mail, telephone, and personal interview. Typically, mailed questionnaire surveys have the lowest costs, but lower response rates. However, this researcher's response rate goal was within the reach of mail surveys. It was expected that the response from the mail survey might be inadequate to minimize possible non-response biases and for analysis. Therefore preparation for a "follow-up" survey was necessary. Many follow-up procedures exist. One research study (Dillman, et al., 1974) suggests a series of mail follow-up procedures to achieve responses as high as 90 plus percent. But this involves considerable time and expense in conducting numerous repetitive mail surveys. A response rate in the 40 to 60 percent range was considered sufficient (due to cost considerations) and attainable for this research. A phone follow-up survey seemed to have the greatest chance of returning high response rates in the shortest time with acceptable costs (Payne, 1956). Therefore the mail, phone follow-up survey combination was used.

During the summer of 1977, questionnaries were mailed to all 758 owners of the 1000 randomly selected plots. The mail survey returned 16 percent response. This amounted to slightly over 100 landowner respondents. Since the response rate was considered inadequate, the follow-up phone procedure was conducted. Because the cost of calling all non-respondents would be too high, 300 names were randomly selected from the 640 non-respondents. The response rate of the phone survey was 71 percent. Both surveys combined provided responses from 44 percent of the landowners drawn in the original sample. The response rate on a land area basis was also 44 percent. This indicates the respondents represent a good cross section of owners, in terms of size of ownership.

Causes for phone non-response were primarily addresses and phone numbers which were not current. Only five percent of the phone contacts refused to respond, and two percent did not fully respond. Most landowners were anxious to talk, very receptive, and cooperative. Many desired immediate contact for forestry assistance.

The Analytical Procedure

Before results could be presented and analyzed, it was necessary to determine if the data from the mail and phone surveys could be combined. If mail survey responses were significantly different from phone survey responses, then a non-response bias would be indicated. If there is no response difference between the two surveys, then it is reasonable to expect that the surveys have sampled approximately the same population cross-section. A one-way analysis of variance was used

to test the hypothesis that there were no significant differences in education, income, attitude toward clearcutting, and commercial forest management objectives between these two subsamples. These characteristics and others were expected to vary according to ownership size. To control for this variation, the responses were broken down into three timber ownership size categories: zero to 250, 251 to 1000, and 1001 plus acres of timberland. Tests for significant differences between the surveys were carried out for each category.

Following the presentation of results, a descriptive analysis was developed to identify relationships and trends in the commercial forest management, attitudes, and socioeconomic characteristics of the owners of the land area in the 17 eastern counties in Oklahoma. The analytical approach was a branching process in which the initial tests were based on correlations.

Pearson correlation coefficients were calculated for all possible one-to-one relationships between interval variables. Chi square and eta were calculated for nominal-nominal and nominal-interval relationships, respectively, to identify any "across-category" patterns which might exist. In addition, Pearson correlations were calculated for dichotomized nominal variables relating to questions of whether one conducted certain practices. This included only those binary variables whose categories have a relatively equal and sufficient number of degrees of freedom. Since a binary variable in reality establishes an interval between two categories, the measure approaches the Pearson ideals, assymptotically. The significant Pearson correlations are summarized in Table XXX (Appendix B). These correlations were used

to identify the potential relationships for testing in subsequent analysis. Table XXXI (Appendix C) identifies the survey questions with correlation variable names and associated codes.

Multiple linear (least squares) regression and discriminant analysis were then applied in this analysis. Both approaches provide stepwise procedures appropriate for structural analysis. Stepwise procedure in multiple regression was used in identifying management activities and socioeconomic characteristics which relate to survey measures of commercial forest management and ownership patterns. Discriminant analysis was used to dichotomize the activities and characteristics of owners of the land area who possess 10 acres or more of timber by socioeconomic characteristics, attitudes, and objectives.

One important point to remember is that these analyses were applied to identify associative relationships in the data. Uncertainty of causal relationships was the reason these analyses were not used for prediction (Green and Tull, 1975). The Statistical Package for the Social Sciences (SPSS) (Nie et al., 1975) was used for the analysis.

Use of Regression and Discriminant Analysis

Least squares regression has wide acceptance as a tool in statistically testing linear relationships. Regression has highly stringent requirements on the data. Multiple regression was used in the first four analyses presented (Tables XVIII through XXII). In each of the regression models the stepwise standardized beta coefficients, partial F, and R^2 statistics will be presented and

interpreted.[1] In these structural analyses, significant independent variables are not meant to imply cause and effect but simply that which relates to the dependent variable.

Following the regressions, commercial forestry activities and objectives of owners of the land area possessing 10 acres or more of timber were dichotomized for use as dependent variables in multiple discriminant analysis (Tables XXIII through XXIX). These dichotomies, or discriminations, were based on two sets of independent variables of one measuring socioeconomic characteristics and the other measuring land management attitudes and objectives.

Discriminant analysis has nearly the same stringent requirements on the data as does regression analysis. Some of the major assumptions of the model are linearity of the relationships, normal, equal distributions of the independent variables among the discriminant groups, no multi-colinearity among independent variables, and interval scale of independent variables.

To discriminate between two or more groups (response categories), a linear discriminant axis, or hyperplane, is calculated which best separates these groups based on a given set of independent variables. The discriminating criteria is somewhat similar to the least squares technique used in regression. The difference is that the discriminating criteria determines the hyperplane which maximizes the vector deviation from each group. This is accomplished by maximizing the ratio of between-group variation to within-group variation, which

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[1]Interested readers are referred to Draper and Smith (1966).

provides an F statistic. This F statistic measures the explanation derived from segmenting. Absence of any variable from the final discriminant equation implies no significant differences between group means, as in MANOVA.[2]

Multiple discriminant analysis can be used to both analyze data structure and to predict. But in this analysis only structural statistics will be relied upon. Therefore, in this study, more importance was given to the significance of the additional discriminating power of the independent variables (partial F) than to classifying individuals by discriminant coefficients.

The canonical correlation can be used to indicate the degree of multiple discrimination. It is a measure of the association between the single discriminant function and the set of dummy variables which define the group memberships (Nie et al., 1975). It shows how closely the function and the "group variables" are related, which is a measure of the function's discriminating ability. Therefore canonical correlations are presented to lend support to the overall strength of the models.

Although statistics associated with predictive capability (e.g., percent correctly classified) have been considered inappropriate as sole criteria for structure analysis, they can be used to add confidence to measures of structural discrimination. If the analysis did not identify a large amount of group discrimination, a high percentage of individuals will be incorrectly classified due to mild

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[2]Interested readers are referred to Morrison (1967).

group differences. Therefore the percentage of those correctly classified over and above that expected by chance will be presented as supporting evidence for conclusions.

The independent variables considered in subsequent regression and discriminant analyses can be usefully thought of as comprising three groups: (1) socioeconomic characteristics, (2) land management activities, and (3) management attitudes and objectives. The socio-economic characteristics include whether ownerships have 10 acres or more of timber, pine acreage, mixed pine acreage, bottomland hardwood acreage, post oak/blackjack acreage, total timber acreage, absenteeism, land tenure, method of acquiring land, income, and education. The land management activity measures include commercial or non-commercial timber use, plans to convert timber, whether timber was sold in the last five years, acres in timber sales, distance from timber sale to mill or yard, and whether one has regenerated or planted timber and acres regenerated. Also included are whether one has used timber stand improvement techniques and the number of acres which were non-commercially thinned, fertilized, pruned, burned, and on which herbicides were applied. Finally, those variables which measure forest management attitudes and objectives are whether one desires forestry assistance, chances of planting trees in the next five years, chances of initiating or continuing commercial forest management, attitude toward timber thinning, prescribed burning, fertilization, logging road construction, and clearcutting.

The use of these independent variable sets applied to only those variables whose scales of measure met the requirements of the

statistical technique. This constraint and other data anomalies such as significant multi-colinearity, severe non-normal distributions and non-linearities, and lack of adequate degrees of freedom determined what variables would appear in the final model. The final model in each analysis was a result of the stepwise procedure to regress or discriminate only those variables which have statistically significant additional explanatory power and satisfy the model assumptions.

CHAPTER III

SURVEY RESULTS

Introduction

The results from the analysis of variance between the mail and phone questionnaires showed that with two exceptions there were no significant differences at the .1 probability level (Table III). The exceptions were statistical differences in education in the zero to 250 and the 251 to 1000 timber acre classes. But the actual mean difference was an approximate year and a half of education in both acreage classes, which in reality should have no meaningful effect. Thus, it was deemed appropriate to present results from the combined mail and phone responses.

The questionnaire results are broken down into four major categories. The first category (Tables IV to VI) is based on the combined responses of owners sampled in the 17 county area. The next set (Tables VII to IX) categorizes these landowner responses according to G. H. Weaver's groupings. The third set (Tables X to XIII) is the response results of owners of the sampled land area who possess 10 acres or more of timber. And the final set (Tables XIV to XVII) is the response results of the same landowners as in the third set, but categorized by G. H. Weaver's groupings.

It must be reiterated that the results must be interpreted on a land area basis not a landowner basis. For example, describing land-

TABLE III

SIGNIFICANCE PROBABILITY LEVELS IN TESTING
MAIL AND PHONE SURVEY DIFFERENCES

Independent Measure	0 to 250 (timber acres)	251 to 1000 (timber acres)	1000 and more (timber acres)
	- - - - - - - - - - Alpha levels - - - - - - - - - -		
Education	.014	.081	.176
Income	.617	.958	.866
Attitude Toward Clearcutting	.950	.294	.856
Chance for Commercial Forest Management	.164	.188	.882

owners income in Table IV one could say that 35.4 percent of the sample land base is owned by those having an annual household income of $25,000 or more. Or, in the same table, that 17.4 percent of the surveyed land area is owned by retired individuals.

Combined Landowner Responses

Tables IV through VI, present the landowner response breakdowns by socioeconomic characteristics, attitudes, and land management objectives. Certain socioeconomic conditions stand out:

1. The owners of about 69 percent of the land area have at least a high school education (Table IV).

2. Less land is owned by middle income individuals than high and low income individuals (Table IV).

3. Land tenure classes appeared to have an even greater distribution (Table IV), indicating no dominance of any particular tenured class of land area owners.

4. The vast majority of land was acquired through purchases (Table IV).

5. Owners of nearly 40 percent of the land area are farmers and ranchers (Table IV), and a fairly high percentage (17.4 percent) is owned by retired individuals.

6. Mostly, owners of a large portion of the land area were neutral or undecided toward five forest management practices. However, when opinions were expressed, there was more land area represented by those who agree. The most controversial practice appeared to be prescribed burning with clearcutting close behind (Table V).

7. Owners of over 80 percent of the land area were unfamiliar with the "Best Forest Management Practices Guidelines" (Table V).

8. Owners of 66 percent of the land area indicated little or no chance of initiating or continuing commercial forest management, but 16.4 percent showed a very strong likelihood. When responding to this measure, the most important consideration were costs and returns (Table VI).

Regarding the owner of the average acre, he is slightly more than

TABLE IV

SOCIOECONOMIC CHARACTERISTICS OF OWNERS OF THE LAND AREA SURVEYED

Characteristic	Number of Observations	Percent of Land Area Surveyed that is Owned by People who Answered as Indicated	Response of the Owners Surveyed Based on the Average Acre
Education:			12.71 yrs.
Never Attended School	34	6.1	
Elementary School (1 - 11 yrs.)	137	24.8	
High School (Grad. - 1 yr. of College)	167	30.2	
College (2 or more yrs.)	215	38.9	
Income:			$17185/yr.
Less than $5000	104	19.1	
$5001 - $7000	15	2.8	
$7001 - $9000	41	7.5	
$9001 - $12000	69	12.7	
$12001 - $15000	55	10.1	
$15001 - $20000	52	9.4	
$20001 - $25000	17	3.1	
$25001 and more	193	35.4	
Land Tenure in Years:			26.7 yrs.
0 - 5	39	7.4	
6 - 10	59	11.2	
11 - 15	43	8.2	
16 - 20	64	12.2	
21 - 25	45	8.6	
26 - 30	96	18.3	
31 - 35	64	12.2	
36 - 40	41	7.8	
41 - 45	16	3.0	
46 and more	59	11.2	
Method of Land Acquisition:			
Purchase	504	91.1	
Homestead	7	1.3	
Inheritance	42	7.6	
Occupation:			
Farmer	198	38.9	
Retired	88	17.4	
Professional	71	13.9	
Merchant	67	13.2	
Skilled Labor	65	12.9	
Other	19	3.7	

TABLE V

ATTITUDES TOWARD FOREST MANAGEMENT PRACTICES AND POLICIES BY OWNERS OF THE LAND AREA SURVEYED

Characteristic		Number of Observations	Percent of Land Area Surveyed that is Owned by People who Answered as Indicated	Response of the Owners Surveyed Based on the Average Acre
Attitude Toward Thinning:				
Strongly Agree	(SA)	103	18.6	
Agree	(A)	259	46.8	
Neutral or Undecided	(N)	184	33.3	
Disagree	(D)	4	.7	
Strongly Disagree	(SD)	3	.5	
Attitude Toward Prescribed Burning:				
Strongly Agree	(SA)	47	8.5	
Agree	(A)	150	27.1	
Neutral or Undecided	(N)	226	40.9	
Disagree	(D)	82	14.8	
Strongly Disagree	(SD)	48	8.7	
Attitude Toward Fertilization:				
Strongly Agree	(SA)	30	5.4	
Agree	(A)	116	21.0	
Neutral or Undecided	(N)	396	71.6	
Disagree	(D)	10	1.8	
Strongly Disagree	(SD)	1	.2	
Attitude Toward Logging Road Construction:				
Strongly Agree	(SA)	23	4.2	
Agree	(A)	129	23.3	
Neutral or Undecided	(N)	345	62.4	
Disagree	(D)	39	7.1	
Strongly Disagree	(SD)	17	3.1	
Attitude Toward Clearcutting:				
Strongly Agree	(SA)	22	4.0	
Agree	(A)	153	27.7	
Neutral or Undecided	(N)	260	47.0	
Disagree	(D)	75	13.6	
Strongly Disagree	(SD)	43	7.8	
Attitude Toward "Best Management Practices Guidelines":				
Unfamiliar		458	83.0	
Strongly Agree	(SA)	7	1.3	
Agree	(A)	43	7.8	
Neutral or Undecided	(N)	34	6.2	
Disagree	(D)	10	1.8	
Strongly Disagree	(SD)	0	0	

TABLE VI

FOREST MANAGEMENT OBJECTIVES OF OWNERS OF THE LAND AREA SURVEYED

Measure	Number of Observations	Percent of Land Area Surveyed that is Owned by People who Answered as Indicated	Response of the Owners Surveyed Based on the Average Acre
Chance of Planting Trees in the Next 5 Years			28.3%
0 - 20%	346	66.1	
21 - 40%	21	4.0	
41 - 60%	43	8.2	
61 - 80%	28	5.3	
81 - 100%	86	16.4	
Reason for Planting Trees:			
Increase Land Value	104	33.3	
Economic Returns	164	52.5	
Wildlife Habitat	25	8.0	
Erosion Control	19	6.1	
Reason for not Planting Trees:			
No Suitable Land	20	4.0	
Other Uses with Higher Returns	336	67.7	
Insufficient Capital	37	7.5	
Insufficient Labor	9	1.8	
Insufficient Information	76	15.3	
Land not in Need of Regeneration	18	3.6	

high school educated and has owned the land for nearly 27 years since purchase. The median income of the survey land area is $11,346. The owner of the average acre is generally neutral toward the listed commercial forestry practices, leaning toward agreement; and his chance for planting trees is low (28.3 percent).

Grouped Landowner Responses

The second set of result summaries, Tables VII to IX, presents the same information broken down by G. H. Weaver's groupings. These tables present the number of observations and the percentage of surveyed land area represented by the respondents. Observations that come from these results are:

1. Grouped landowner socioeconomic characteristics (Table VII) display no major divergence from the distribution in combined responses in Table IV, except for Group 4 (Muskogee county). Muskogee county (Medium Agricultural Income) owners of the land area are slightly more educated, wealthier, and longer land tenured than those of other groups.

2. Owners of the land area are not so neutral or undecided regarding forestry practices the further southeast and nearer the wood markets (Table VIII). Group 1 (McCurtain county), high industrial ownerships are less neutral or undecided in their attitudes toward prescribed burning and clearcutting than owners of the land area in other groups. Group 5 (non-farm, non-industrial ownerships) owners of the land area are more neutral or undecided than those of any other group.

3. McCurtain county (Group 1) owners of the land area are more familiar with the "Best Management Practices Guidelines" than those of any other group (Table VIII). This is expected since timber is managed relatively more intensively further southeast.

4. Groups 1 (high industrial), 2 (mountain forest), 3 (low agricultural income) owners of the land area lean more toward tree planting than the others (Table IX). Possibly a result of higher fiber stumpage values in these areas.

5. Costs and returns seemed to be the major cause effecting one's likelihood of planting trees in the next five years (Table

TABLE VII

SOCIOECONOMIC CHARACTERISTICS OF OWNERS OF THE LAND AREA, BY GROUP, EXPRESSED AS A PERCENTAGE OF LAND AREA SURVEYED AND THE NUMBER OF OBSERVATIONS

	Group 1		Group 2		Group 3		Group 4		Group 5		Group 6	
Characteristic	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Education:												
Never Attended	1	1.1	9	6.6	20	11.8	0	0	2	3.2	2	3.2
Elementary School (1-11 yrs.)	17	19.5	32	23.5	43	25.4	12	32.4	14	22.6	19	30.6
High School (Grad.-1 yr. of college)	35	40.2	43	31.6	48	28.4	6	16.2	18	29.0	17	24.7
College (2 or more yrs.)	34	39.1	52	38.2	58	34.3	19	51.4	28	45.2	24	38.7
Income:												
Less than $5000	11	13.6	17	12.7	48	28.4	3	8.1	7	11.3	18	29.0
$5001 - $7000	4	4.9	6	4.5	5	3.0	0		0		0	
$7001 - $9000	6	7.4	14	10.4	11	6.5	2	5.4	3	4.8	5	8.1
$9001 - $12000	6	7.4	22	16.4	22	13.0	2	5.4	9	14.5	8	12.9
$12001 - $15000	11	13.6	12	9.0	8	4.7	2	5.4	14	22.6	8	12.9
$15001 - $20000	9	11.1	15	11.2	12	7.1	8	21.6	4	6.5	3	4.8
$20001 - $25000	4	4.9	4	3.0	4	2.4	0		5	8.1	0	
$25001 and more	30	37.0	44	32.8	59	34.9	20	54.1	20	32.3	20	32.3
Tenure in Years:												
0 - 5	8	9.9	8	6.2	14	8.7	3	8.1	2	3.6	4	6.5
6 - 10	6	7.4	22	17.1	18	11.2	0		12	21.4	1	1.6
11 - 15	11	13.6	9	7.0	5	3.1	2	5.4	6	10.7	10	16.1
16 - 20	8	9.9	12	9.3	21	13.0	2	5.4	8	14.3	13	21.0
21 - 25	9	11.1	13	10.1	12	7.5	1	2.7	6	10.7	4	6.5
26 - 30	24	29.6	11	8.5	36	22.4	12	32.4	8	14.3	5	8.1
31 - 35	6	7.4	13	10.1	29	18.0	4	10.8	4	7.1	8	12.9
36 - 40	4	4.9	11	8.5	13	8.1	3	8.1	2	3.6	8	12.9
41 - 45	1	1.2	5	3.9	5	3.1	0		4	7.1	1	1.6
46 and more	4	4.9	25	19.4	8	5.0	10	27.0	4	7.1	8	12.9
Method of Land Acquisition:												
Purchase	83	95.5	114	83.5	159	94.1	85	94.6	58	93.5	55	88.7
Homestead	1	1.1	2	1.5	2	1.2	0		1	1.6	1	1.6
Inheritance	3	3.4	20	14.7	8	4.7	2	5.4	3	4.8	6	9.7
Occupation:												
Farmer	39	45.1	55	40.3	71	42.2	24	27.6	27	41.3	25	40.7
Retired	6	7.3	13	9.6	17	9.8	10	11.3	6	10.7	7	10.8
Professional	7	8.6	11	8.4	15	9.1	17	19.1	7	11.6	7	10.8
Merchant	9	10.1	17	12.5	13	7.6	15	16.7	7	11.4	8	11.9
Skilled Labor	21	23.4	28	21.2	41	24.1	21	23.8	13	20.9	12	19.7
Other	5	5.5	12	9.1	12	7.2	1	1.5	2	3.9	3	6.1

TABLE VIII

ATTITUDES TOWARD FOREST MANAGEMENT PRACTICES AND POLICIES OF OWNERS OF THE LAND AREA, BY GROUP, EXPRESSED AS A PERCENTAGE OF LAND AREA SURVEYED AND THE NUMBER OF OBSERVATIONS

Characteristic		Group 1		Group 2		Group 3		Group 4		Group 5		Group 6	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Attitude Toward Thinning:													
Strongly Agree	(SA)	19	21.8	39	28.7	31	18.3	0		5	8.1	9	14.5
Agree	(A)	54	62.1	53	39.0	81	47.9	18	48.6	19	30.6	34	54.8
Neutral or Undecided	(N)	13	14.9	41	30.1	56	33.1	19	51.4	37	59.7	18	29.0
Disagree	(D)	0		1	.7	1	.6	0		1	1.6	1	1.6
Strongly Disagree	(SD)	1	1.1	2	1.5	0		0		0		0	
Attitude Toward Prescribed Burning:													
Strongly Agree	(SA)	7	8.0	14	10.3	14	8.3	1	2.7	5	8.1	6	9.7
Agree	(A)	46	52.9	30	22.1	46	27.2	7	18.9	14	22.6	7	11.3
Neutral or Undecided	(N)	15	17.2	54	39.7	80	47.3	18	48.6	34	54.8	25	40.3
Disagree	(D)	4	4.6	27	19.9	25	14.8	3	8.1	6	9.7	17	27.4
Strongly Disagree	(SD)	15	17.2	11	8.1	4	2.4	8	21.6	3	4.8	7	11.3
Attitude Toward Fertilization:													
Strongly Agree	(SA)	4	4.6	13	9.6	6	3.6	0		2	3.2	5	8.1
Agree	(A)	19	21.8	31	22.8	30	17.8	9	24.3	10	16.1	17	27.4
Neutral or Undecided	(N)	63	72.4	86	63.2	131	77.5	28	75.7	50	80.6	38	61.3
Disagree	(D)	1	1.1	5	3.7	2	1.2	0		0		2	3.2
Strongly Disagree	(SD)	0		1	.7	0		0		0		0	
Attitude Toward Logging Road Construction:													
Strongly Agree	(SA)	3	3.4	4	2.9	9	5.3	0		2	3.2	5	8.1
Agree	(A)	30	34.5	31	22.8	39	23.1	1	2.7	7	11.3	21	33.9
Neutral or Undecided	(N)	22	25.3	92	67.6	112	66.3	34	91.7	53	85.5	32	51.6
Disagree	(D)	24	27.6	3	2.2	8	4.7	0		0		4	6.5
Strongly Disagree	(SD)	8	9.2	6	4.4	1	.6	2	5.4	0		0	
Attitude Toward Clearcutting:													
Strongly Agree	(SA)	6	6.9	2	1.5	6	3.6	0		2	3.2	6	9.7
Agree	(A)	35	40.2	37	27.2	51	30.2	2	5.4	9	14.5	19	30.6
Neutral or Undecided	(N)	25	28.7	68	50.0	76	45.0	22	59.5	43	69.4	26	41.9
Disagree	(D)	5	5.7	21	15.4	32	18.9	4	10.8	5	8.1	8	12.9
Strongly Disagree	(SD)	16	18.4	8	5.9	4	2.4	9	24.3	3	4.8	3	4.8
Attitude Toward "Best Management Practices Guidelines:													
Unfamiliar		48	55.2	117	86.0	145	85.8	35	94.6	55	88.7	58	95.1
Strongly Agree	(SA)	6	6.9	1	.7	0		0		0		0	
Agree	(A)	20	23.0	2	1.5	14	8.3	1	2.7	4	6.5	2	3.3
Neutral or Undecided	(N)	9	10.3	16	11.8	4	2.4	1	2.7	3	4.8	1	1.6
Disagree	(D)	4	4.6	0		6	3.6	0		0		0	
Strongly Disagree	(SD)	0		0		0		0		0		0	

TABLE IX

FOREST MANAGEMENT OBJECTIVES OF OWNERS OF THE LAND AREA, BY GROUP, EXPRESSED AS A PERCENTAGE OF THE LAND AREA SURVEYED AND THE NUMBER OF OBSERVATIONS

Measure	Group 1		Group 2		Group 3		Group 4		Group 5		Group 6	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Chance of Planting Trees in the Next 5 Years:												
0 - 20%	30	39.4	88	68.8	104	64.6	30	81.1	50	80.7	44	73.3
21- 40%	3	3.9	6	4.7	6	3.7	1	2.7	1	1.6	4	6.7
41 - 60%	5	6.5	14	10.9	13	8.1	2	5.4	5	8.0	4	6.7
61 - 80%	5	6.5	4	3.1	16	9.9	1	2.7	1	1.6	1	1.7
81 - 100%	33	43.4	16	12.5	22	13.6	3	8.1	5	8.1	7	11.7
Reason for Planting Trees:												
Increase Land Value	7	10.3	43	50.5	27	32.9	6	50.0	18	50.0	3	10.7
Economic Returns	51	75.0	39	45.9	49	59.8	3	25.0	10	27.8	12	42.9
Wildlife Habitat	8	11.8	4	4.7	4	4.9	3	25.0	2	5.6	4	14.3
Erosion Control	2	2.9	0		2	2.4	0		6	16.7	9	32.1
Reason for Not Planting Trees:												
No Suitable Land	3	5.1	1	.8	7	4.3	1	2.9	2	3.4	6	10.9
Other Uses of Higher Returns	35	59.3	74	58.3	125	77.2	28	82.4	38	64.4	36	65.5
Insufficient Capital	7	11.9	9	7.1	14	8.6	2	5.9	2	3.4	3	5.5
Insufficient Labor	1	1.7	5	3.9	2	1.2	0		1	1.7	0	
Insufficient Information	9	15.3	35	27.6	12	7.4	3	8.8	7	11.9	10	18.2
Land not in Need of Regeneration	4	6.8	3	2.4	2	1.2	0		9	15.3	0	

IX). And with decreasing wood market density, timber takes on increasing non-fiber values, i.e., aesthetics and wildlife habitat.

From phone conversations, Muskogee county (Group 4) owners of the land area saw little applicability of this research to their circumstances.

Combined Timber Owner Responses

Tables X through XIII summarize the responses of the owners of the land area who possess 10 acres or more of timber. Responses include the same measures as the first set of results plus some additional socioeconomic, attitude and management objective measures. All response summaries pertain to the category of owners of the land area who possess 10 acres or more of timber. In fact all subsequent results presented will pertain to owners of the land area in this category only. A more detailed, analytical test will be presented later showing the extent to which timber and non-timbered landowners differ. Now to summarize the more copious points:

1. After removing the effects of non-timbered owners, the owner of the average timber acre increased slightly in annual income and land tenure (Table X).

2. In general, pine holdings are larger than hardwood holdings (Table X).

3. Timber ownerships of 14 percent of the land area have over 1000 acres of pine (Table X). The largest timber class of the land area ownerships in this category is the 100 to 500 acres of the post oak/blackjack oak class.

4. Forty-five percent of the land area in ownerships in this category is owned by absentees, who lived an average of 52 miles away from their forested tract (Table X).

5. Timber owners of the land area agreed more with timber thinning and disagreed more with prescribed burning and clear-cutting than all owners of the land area (Table XI).

6. Timber owners of the land area were more familiar with the "Best Management Practices Guidelines" (Table XI).

TABLE X

SOCIOECONOMIC CHARACTERISTICS OF OWNERS OF THE LAND AREA SURVEYED WHO POSSESS 10 ACRES OR MORE OF TIMBER

Characteristic	Number of Observations	Percent of Land Area Surveyed that is Owned by People who Answered as Indicated	Response of the Owners Surveyed Based on the Average Acre
Education:			12.71 yrs.
Never Attended School	31	7.4	
Elementary	99	23.7	
High School	117	28.1	
College	170	40.8	
Income:			$18229
Less than $5000	64	15.6	
$5001 - $7000	9	2.2	
$7001 - $9000	29	7.1	
$9001 - $12000	57	13.9	
$12000 - $15000	36	8.8	
$15001 - $20000	41	10.0	
$20001 - $25000	12	2.9	
$25001 and more	162	39.5	
Tenure, in Years:			27.06 yrs.
0 - 5	26	6.5	
6 - 10	45	11.2	
11 - 15	30	7.5	
16 - 20	47	11.7	
21 - 25	30	7.5	
26 - 30	82	20.5	
31 - 35	47	11.7	
36 - 40	30	7.5	
41 - 45	13	3.2	
46 and up	50	12.5	
Method of Land Acquisition:			
Purchase	382	92.1	
Homestead	5	1.2	
Inheritance	28	6.7	
Occupation:			
Farmer	156	37.5	
Retired	77	18.4	
Professional	60	14.3	
Merchant	54	13.0	
Skilled Labor	54	13.0	
Other	16	3.9	
Number of Timbered Acres Owned by Type:			
Pine			5357 ac.
0 - 10	3	.7	
11 - 100	24	5.8	

TABLE X (Continued)

Characteristic	Number of Observations	Percent of Land Area Surveyed that is Owned by People who Answered as Indicated	Response of the Owners Surveyed Based on the Average Acre
101 - 500	46	6.2	
501 - 1000	1	.2	
1000 and more	59	14.1	
Mixed Pine and Hardwoods			1888 ac.
0 - 10	4	1.0	
11 - 100	31	7.4	
101 - 500	25	6.0	
501 - 1000	21	5.0	
1001 and more	56	13.4	
Bottomland			299 ac.
0 - 10	14	3.4	
11 - 100	51	12.2	
101 - 500	60	14.4	
501 - 1000	24	5.8	
1001 and more	0		
Post Oak and Blackjack			577 ac.
0 - 10	16	3.8	
11 - 100	93	22.3	
101 - 500	103	24.7	
501 - 1000	62	14.9	
1001 and more	18	4.3	
Absenteeism:			
Absentee	186	45.1	
Non-Absentee	226	54.9	
Distance of Absentee Residence from Forested Property, In Miles:			51.8 mi.
0 - 10	53	12.7	
11 - 25	54	12.9	
26 - 50	33	7.9	
51 and more	45	10.8	

TABLE XI

ATTITUDES TOWARD FOREST MANAGEMENT PRACTICES AND POLICIES OF OWNERS OF THE LAND AREA SURVEYED WHO POSSESS 10 ACRES OR MORE OF TIMBER

Characteristic		Number of Observations	Percent of Land Area Surveyed that is Owned by People who Answered as Indicated	Response of the Owners Surveyed Based on the Average Acre
Attitude Toward Thinning:				
Strongly Agree	(SA)	91	21.8	
Agree	(A)	202	48.4	
Neutral or Undecided	(N)	120	28.8	
Disagree	(D)	2	.5	
Strongly Disagree	(SD)	2	.5	
Attitude Toward Prescribed Burning:				
Strongly Agree	(SA)	37	8.9	
Agree	(A)	122	29.3	
Neutral or Undecided	(N)	164	39.3	
Disagree	(D)	51	14.2	
Strongly Disagree	(SD)	43	10.3	
Attitude Toward Fertilization:				
Strongly Agree	(SA)	22	5.3	
Agree	(A)	94	22.5	
Neutral or Undecided	(N)	292	70.0	
Disagree	(D)	8	1.9	
Strongly Disagree	(SD)	1	.2	
Attitude Toward Logging Road Construction:				
Strongly Agree	(SA)	17	4.1	
Agree	(A)	98	23.5	
Neutral or Undecided	(N)	248	59.5	
Disagree	(D)	38	9.1	
Strongly Disagree	(SD)	16	3.8	
Attitude Toward Clearcutting:				
Strongly Agree	(SA)	15	3.6	
Agree	(A)	125	30.0	
Neutral or Undecided	(N)	181	43.4	
Disagree	(D)	56	13.4	
Strongly Disagree	(SD)	40	9.6	
Attitude Toward "Best Management Practices Guidelines":				
Unfamiliar		336	80.6	
Strongly Agree	(SA)	7	1.7	
Agree	(A)	38	9.1	
Neutral or Undecided	(N)	27	6.5	
Disagree	(D)	9	2.2	
Strongly Disagree	(SD)	0		

TABLE XII

FOREST MANAGEMENT OBJECTIVES OF OWNERS OF THE LAND AREA SURVEYED WHO POSSESS 10 ACRES OF TIMBER

Measure	Number of Observations	Percent of Land Area Surveyed that is Owned by People who Answered as Indicated	Response of the Owners Surveyed Based on the Average Acre
Chance of Planting Trees in the Next 5 Years:			31.5%
0 - 20	241	50.8	
21 - 40	20	5.0	
41 - 60	36	9.1	
61 - 80	27	6.9	
81 - 100	72	18.2	
Reason for Planting Trees:			
Increase Land Value	81	19.4	
Economic Returns	142	34.1	
Wildlife Habitat	21	5.0	
Erosion Control	9	2.2	
Reason for not Planting Trees:			
No Suitable Land	9	2.2	
Other Uses with Higher Returns	251	60.2	
Insufficient Capital	28	6.7	
Insufficient Labor	7	1.7	
Insufficient Information	60	14.4	
Land Not in Need of Regeneration	14	3.4	
Chance of Commercial Production of Timber Owned:			32.1%
0 - 20	250	63.0	
21 - 40	27	6.8	
41 - 60	11	2.8	
61 - 80	4	1.0	
81 - 100	105	26.5	
Planned Assistance:			
Yes	101	24.7	
No	308	75.3	
Past Use of Assistance Programs:			
State	91	21.8	
Industry	18	4.3	
Federal	23	5.5	

TABLE XIII

ACTIVITIES AND MOTIVATIONS OR OWNERS OF THE LAND AREA SURVEYED WHO POSSESS 10 ACRES OR MORE OF TIMBER

Measure	Number of Observations	Percent of Land Area Surveyed that is Owned by People who Answered as Indicated	Response of the Owners Surveyed Based on the Average Acre
Use of Timber:			
Grazing	212	50.8	
Commercial Production	86	20.6	
Erosion Control	6	1.4	
No Use	85	20.4	
Investment	27	6.5	
Planning to Convert Use of Timberland:			
Clear for Pasture	133	31.9	
Clear for Crops	2	.5	
Another Forest Type	31	7.4	
Type of Timber that Owner is Converting From:			
Pine	6	1.4	
Mixed Pine	12	2.9	
Bottomland Hardwoods	9	2.2	
Post Oak and Blackjack	37	8.9	
Type of Timber that the Owner is Converting to:			
Pine	56	13.4	
Mixed Pine	3	.7	
Bottomland Hardwoods	2	.5	
Post Oak and Blackjack	1	.2	
Timber Sale(s) in the Last 5 Years:			
Yes	168	40.5	
No	247	59.5	
Number of Acres Sold:			1143.3 ac.
0 - 10	30	7.2	
11 - 50	15	3.6	
51 - 100	39	9.4	
101 - 500	27	6.5	
501 and more	52	12.5	
Distance From Harvest Location to Mill or Yard, in Miles:			40.6 mi.
0 - 10	48	11.5	
11 - 25	27	6.5	
26 - 50	34	8.2	
51 and more	48	11.5	
Physical Reasons for Selling Timber:			
Mature Timber	36	8.6	
Commercial Thinning	73	17.5	
Convert to other Forest Type	0		
Clear for Grazing or Crops	59	14.1	

TABLE XIII (Continued)

Measure	Number of Observations	Percent of Land Area Surveyed that is Owned by People who Answered as Indicated	Response of the Owners Surveyed Based on the Average Acre
Economic Reasons for Selling Timber:			
Financially Mature	58	13.9	
Meet Current Expenses	30	7.2	
Need Cash	21	5.0	
Offered a High Price	53	12.7	
Reason For NOT Selling Timber:			
Waiting for Higher Prices	28	6.7	
Timber Too Small	84	20.1	
Unfamiliar with Buyers	40	9.6	
Market Not Available	16	3.8	
Part of Management Plan	64	15.3	
Previously Used Regeneration Techniques:			
Hand Planting	50	12.0	
Machine Planting	18	4.3	
Direct Seeding	22	5.3	
Natural Regeneration	77	18.5	
Number of Acres Regenerated:			219.5 ac.
0 - 5	22	5.3	
6 - 10	10	2.4	
11 - 20	1	.2	
21 - 50	13	3.1	
51 - 100	6	1.4	
101 and more	22	5.3	
Number of Acres of Timber Stand Improvement Techniques Used in the Last 5 Years:			
Non-Commercial Thinning:			335.9 ac.
0 - 5	7	1.7	
6 - 10	3	.7	
11 - 20	10	2.4	
21 - 50	9	2.2	
51 - 100	3	.7	
101 and more	27	6.5	
Fertilization:			94.4 ac.
0 - 5	0		
6 - 10	1	.2	
11 - 20	0		
21 - 50	0		
51 - 100	15	3.6	
100 and more	0		

TABLE XIII (Continued)

Measure	Number of Observations	Percent of Land Area Surveyed that is Owned by People who Answered as Indicated	Response of the Owners Surveyed Based on the Average Acre
Pruning:			10.6 ac.
0 - 5	0		
6 - 10	13	3.6	
11 - 20	1	.2	
21 - 50	0		
51 - 100	0		
101 and more			
Prescribed Burning			135.7 ac.
0 - 5	0		
6 - 10	2	.5	
11 - 20	3	.7	
21 - 50	6	1.4	
51 - 100	1	.2	
101 and more	18	4.3	
Herbicide Application:			334.7 ac.
0 - 5	4	1.0	
6 - 10	4	1.0	
11 - 20	0		
21 - 50	6	1.4	
51 - 100	6	1.4	
101 and more	47	11.3	
Difficulty in Obtaining Loans for Forestry Activities:			
Yes	46	12.3	
No	328	87.7	

7. Owners of 50 percent of the land area in this category indicated little chance of planting trees in the next five years, again, primarily a result of economics (Table XII). One must remember that the time scheme of this objective measure was five years, a small period of time relative to most rotation lengths. Landowners of large timber holdings operating under even-age management are most likely to be planting trees in this five year period.

8. Owners of over 60 percent of the land area in this category indicate a small chance of commercial forest management and owners of over 25 percent of the land area in this category say they will begin or continue commercial forest management (Table XII).

9. Owners of one quarter of land area in this category desire forestry assistance and plan to use it (Table XII). The owners of 21 percent of this land area category indicate they have had state forestry assistance applied.

10. Owners of 40 percent of this land area category harvested and sold timber within the last five years with the owner of the average acre in this land area category sold 1143 acres of timber. Twelve and a half percent of the land area in this category represented timber sales of 500 acres and over (Table XIII).

11. Ownerships of about 14 percent of the land area in this category had non-commercial thinning conducted on them (Table XIII).

12. Ownerships of 17.7 percent of the land area in this category had timber regenerated or planted somewhere on their property, and 16 percent had "TSI" techniques applied (Table XIII).

From phone conversations, one observation is that many landowners commented that, any lack of interest in long term investments or land value enhancements, like forestry, was due in part to their advanced age. Further research into this may reveal a significant relationship.

Grouped Timber Owner Responses

The final set of tables (XIV through XVII) presents Weaver's groupings of the surveyed land area owners who possess 10 acres or

TABLE XIV

SOCIOECONOMIC CHARACTERISTICS OF OWNERS OF THE LAND AREA SURVEYED WHO POSSESS 10 ACRES OR MORE OF TIMBER, BY GROUP, EXPRESSED AS A PERCENTAGE OF LAND AREA OWNERS IN THIS CATEGORY AND THE NUMBER OF OBSERVATIONS

Characteristic	Group 1		Group 2		Group 3		Group 4		Group 5		Group 6	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Education:												
Never Attended	1	1.4	9	8.3	19	13.4	0		2	5.6	0	
Elementary School (1-11 yrs.)	13	17.8	22	20.4	35	24.6	9	31.0	9	25.0	11	37.9
High School (Grad.-1 yr. of college)	28	38.4	31	28.7	37	26.1	4	13.8	12	33.3	5	17.2
College (2 or more yrs.)	31	42.5	46	42.6	51	35.9	16	55.2	13	36.1	13	44.8
Income:												
Less than $5000	5	7.5	11	10.3	38	26.8	1	3.4	4	11.1	5	17.2
$5001 - $7000	3	4.5	3	2.8	3	2.1	0		0		0	
$7001 - $9000	5	7.5	11	10.3	9	6.3	1	3.4	2	5.6	1	3.4
$9001 - $12000	5	7.5	20	18.7	17	12.0	2	6.9	8	22.2	5	17.2
$12001 - $15000	9	13.4	8	7.5	5	3.5	1	3.4	8	22.2	5	17.2
$15001 - $20000	7	10.4	13	12.1	9	6.3	7	24.1	2	5.6	3	10.3
$20001 - $25000	3	4.5	4	3.7	3	2.1	0		2	5.6	0	
$25000 and more	30	44.8	37	34.6	58	40.8	17	58.6	10	27.8	10	34.5
Tenure, in Years:												
0 - 5	4	5.7	7	6.9	13	9.6	1	3.4	1	2.9	0	
6 - 10	5	7.1	19	18.8	15	11.0	0		6	17.1	0	
11 - 15	9	12.9	6	5.9	4	2.9	2	6.9	3	8.6	6	20.7
16 - 20	6	8.6	10	9.9	20	14.7	1	3.4	5	14.3	5	17.2
21 - 25	9	12.9	6	5.9	11	8.9	0		2	5.7	2	6.9
26 - 30	24	34.3	9	8.9	27	19.9	11	37.9	7	20.0	4	13.8
31 - 35	6	8.6	8	7.9	26	19.1	2	6.9	3	8.6	2	6.9
36 - 40	3	4.3	9	8.9	10	7.4	2	6.9	1	2.9	5	17.2
41 - 45	0		3	3.0	5	3.7	0		4	11.4	1	3.4
46 and more	4	5.7	24	23.8	5	3.7	10	34.5	3	8.6	4	13.8
Method of Land Acquisition:												
Purchase	69	94.5	90	83.3	135	95.1	28	96.6	34	94.4	28	96.6
Homestead	1	1.4	1	.9	1	.7	0		1	2.8	1	3.4
Inheritance	3	4.1	17	15.7	5	3.5	1	3.4	1	2.8	0	
Occupation:												
Farmer	32	43.7	42	38.7	57	40.7	9	29.9	14	39.8	11	40.4
Retired	5	6.8	11	10.1	12	8.5	2	7.5	3	9.3	4	13.2
Professional	6	9.1	11	10.1	14	9.7	6	21.3	4	11.3	3	10.1
Merchant	7	9.7	12	11.6	20	13.9	5	17.6	4	11.3	2	5.6
Skilled Labor	18	24.1	22	20.0	31	22.1	6	20.6	10	27.1	7	25.1
Other	5	6.6	10	9.5	7	5.1	1	3.1	1	1.2	2	5.6

TABLE XIV (Continued)

Characteristic	Group 1		Group 2		Group 3		Group 4		Group 5		Group 6	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Number of Timbered Acres Owned by Type:												
Pine												
0 - 10	0		2	1.9	1	.7	0		0		0	
11 - 100	5	6.8	5	4.6	8	5.6	0		0		6	20.7
101 - 500	4	5.5	7	6.5	15	10.6	0		0		0	
501 - 1000	0		1	.9	0		0		0		0	
1001 and more	15	20.5	11	10.2	33	23.2	0		0		0	
Mixed Pine												
0 - 10	0		1	.9	3	2.1	0		0		0	
11 - 100	10	13.7	8	7.4	8	5.6	0		4	11.1	1	3.4
101 - 500	8	11.0	6	5.6	6	4.2	0		0		5	17.2
501 - 1000	1	1.4	17	15.7	3	2.1	0		0		0	
1001 and more	24	32.9	3	2.8	29	20.4	0		0		0	
Bottomland												
0 - 10	5	6.8	1	.9	5	3.5	1	3.4	1	2.8	1	3.4
11 - 100	11	15.1	4	3.7	20	14.1	7	24.1	1	2.8	8	27.6
101 - 500	15	20.5	11	10.2	23	16.2	2	6.9	1	2.8	8	27.6
501 - 1000	0		8	7.4	13	9.2	0		0		3	10.3
1001 and more	0		0		0		0		0		0	
Post Oak and Blackjack												
0 - 10	2	2.7	7	6.5	2	1.4	2	6.9	2	5.5	1	3.4
11 - 100	12	16.4	26	24.1	26	18.3	4	13.8	15	41.7	10	34.5
101 - 500	20	27.4	16	14.8	37	26.1	11	37.9	14	38.9	5	17.2
501 - 1000	0		24	22.2	26	18.3	3	10.3	4	11.1	5	17.2
1001 and more	3	4.1	4	3.7	10	7.0	1	3.4	0		0	
Absenteeism												
Absentee	36	51.4	43	39.8	57	40.1	19	65.5	19	55.9	12	41.4
Non-Absentee	34	48.6	65	40.2	85	59.9	10	34.5	15	44.1	17	58.6
Distance of Absentee Residence from Forested Property, in Miles:												
0 - 10	4	5.5	13	12.0	20	14.1	4	13.8	4	11.1	8	27.6
11 - 25	8	11.0	7	6.5	20	14.1	4	13.8	12	33.3	3	10.3
26 - 50	9	12.3	7	6.5	5	3.5	9	31.0	3	8.3	0	
51 and more	15	20.5	15	13.9	13	9.2	2	6.9	0		0	

TABLE XV

ATTITUDES TOWARD FOREST MANAGEMENT PRACTICES AND POLICIES OF OWNERS OF THE LAND AREA SURVEYED WHO POSSESS 10 ACRES OR MORE OF TIMBER, BY GROUP, EXPRESSED AS A PERCENTAGE OF OWNERS OF THE LAND AREA IN THIS CATEGORY AND THE NUMBER OF OBSERVATIONS

Characteristic		Group 1		Group 2		Group 3		Group 4		Group 5		Group 6	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Attitude Toward Thinning													
Strongly Agree	(SA)	17	23.3	35	32.4	31	21.8	0		3	8.3	5	17.2
Agree	(A)	45	61.6	37	34.3	72	50.7	13	44.8	14	38.9	21	72.4
Neutral or Undecided	(N)	10	13.7	34	31.5	39	27.5	16	55.2	19	52.8	2	6.9
Disagree	(D)	0		1	.9	0		0		0		1	3.4
Strongly Disagree	(SD)	1	1.4	1	.9	0		0		0		0	
Attitude Toward Prescribed Burning:													
Strongly Agree	(SA)	7	9.6	11	10.2	14	9.9	0		3	8.3	2	6.9
Agree	(A)	37	50.7	27	25.0	41	28.9	4	13.8	8	22.2	5	17.2
Neutral or Undecided	(N)	12	16.4	45	41.7	63	44.4	16	55.2	21	58.3	7	24.1
Disagree	(D)	2	2.7	15	13.9	20	14.1	1	3.4	4	11.1	9	31.0
Strongly Disagree	(SD)	15	20.5	10	9.3	4	2.8	8	27.6	0		6	20.7
Attitude Toward Fertilization:													
Strongly Agree	(SA)	4	5.5	11	10.2	6	4.2	0		0		1	3.4
Agree	(A)	16	21.9	24	22.2	27	19.0	9	31.0	7	19.4	11	37.9
Neutral or Undecided	(N)	52	71.2	67	62.0	107	75.4	20	69.0	29	80.6	17	58.6
Disagree	(D)	1	1.4	5	4.6	2	1.4	0		0		0	
Strongly Disagree	(SD)	0		1	.9	0		0		0		0	
Attitude Toward Logging Road Construction:													
Strongly Agree	(SA)	3	4.1	3	2.8	9	6.3	0		0		2	6.9
Agree	(A)	24	32.9	19	17.6	36	25.4	1	3.4	6	16.7	12	41.4
Neutral or Undecided	(N)	15	20.5	77	71.3	89	62.7	26	89.7	30	83.3	11	37.9
Disagree	(D)	24	32.9	3	2.8	7	4.9	0		0		4	13.8
Strongly Disagree	(SD)	7	9.6	6	5.6	1	.7	2	6.9	0		0	
Attitude Toward Clearcutting:													
Strongly Agree	(SA)	6	8.2	1	.9	6	4.2	0		0		2	6.9
Agree	(A)	30	41.1	27	25.0	49	34.5	0		8	22.2	11	37.9
Neutral or Undecided	(N)	17	23.3	56	51.9	56	39.4	17	58.6	26	72.2	9	31.0
Disagree	(D)	4	5.5	16	14.8	27	19.0	3	10.3	2	5.6	4	13.8
Strongly Disagree	(SD)	16	21.9	8	7.4	4	2.8	9	31.0	0		3	10.3
Attitude Toward "Best Management Practices Guidelines:													
Unfamiliar		37	50.7	91	84.3	118	83.1	29	100.0	34	94.4	27	93.1
Strongly Agree	(SA)	6	8.2	1	.9	0		0		0		0	
Agree	(A)	19	26.0	1	.9	14	9.9	0		2	5.6	2	6.9
Neutral or Undecided	(N)	8	11.0	15	13.9	4	2.8	0		0		0	
Disagree	(D)	3	4.1	0		6	4.2	0		0		0	
Strongly Disagree	(SD)	0		0		0		0		0		0	

TABLE XVI

FOREST MANAGEMENT OBJECTIVES OF OWNERS OF THE LAND AREA SURVEYED WHO POSSESS 10 ACRES OR MORE OF TIMBER, BY GROUP, EXPRESSED AS A PERCENTAGE OF OWNERS OF THE LAND AREA SURVEYED IN THIS CATEGORY AND THE NUMBER OF OBSERVATIONS

Measure	Group 1		Group 2		Group 3		Group 4		Group 5		Group 6	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Chance of Planting Trees in the Next 5 Years:												
0 - 20	20	27.4	65	60.2	93	58.5	25	86.2	30	83.3	18	62.1
21 - 40	3	4.1	5	4.6	6	4.2	1	3.4	1	2.7	4	13.6
41 - 60	5	6.8	13	12.0	12	8.5	2	6.8	1	2.7	3	10.3
61 - 80	4	5.5	4	3.7	16	11.3	1	3.4	1	2.7	1	3.4
81 - 100	32	44.8	16	14.8	20	14.1	0		3	8.3	1	3.4
Reason for Planting Trees:												
Increase Land Value	5	6.8	41	38.0	23	16.2	3	10.3	10	27.8	2	6.8
Economic Returns	48	65.8	35	32.4	47	33.1	3	10.3	7	19.4	4	13.6
Wildlife Habitat	7	9.6	4	3.7	3	2.1	2	6.8	1	2.7	4	13.6
Erosion Control	2	2.7	0		0		0		3	8.3	4	13.6
Reason For Not Planting Trees:												
No Suitable Land	3	4.1	1	.9	3	2.1	0		1	2.7	1	6.8
Other Uses with Higher Returns	26	35.6	53	49.1	107	75.4	24	82.8	21	58.3	20	69.0
Insufficient Capital	7	9.6	7	6.5	11	7.7	2	6.8	1	2.7	0	
Insufficient Labor	0		5	4.6	1	.7	0		1	2.7	0	
Insufficient Information	6	8.2	30	27.8	11	7.7	3	10.3	3	8.3	7	24.1
Land Not In Need of Regeneration	3	4.1	3	2.8	2	1.4	0		6	16.6	0	
Chance of Commercial Production of Timber:												
0 - 20	16	21.9	62	57.4	95	68.4	27	93.1	31	86.2	19	70.4
21 - 40	5	6.8	6	5.6	9	6.5	1	3.4	0		4	14.8
41 - 60	1	1.4	3	2.8	3	2.2	1	3.4	3	8.4	0	
61 - 80	0		0		4	2.8	0		0		0	
81 - 100	41	56.2	30	27.8	28	20.1	0		2	5.6	4	14.8
Planned Assistance												
Yes	9	12.3	39	36.1	33	23.2	4	13.6	8	22.2	8	27.6
No	59	80.8	68	63.0	109	76.8	25	86.2	26	72.2	21	72.4
Past Use of Assistance Programs:												
State	12	16.4	35	32.4	31	21.8	4	13.6	6	16.6	3	10.3
Industry	2	2.7	1	.9	14	9.9	0		1	2.7	0	
Federal	6	8.2	6	5.6	0		0		2	5.4	0	

TABLE XVII

ACTIVITIES AND MOTIVATIONS OF OWNERS OF THE LAND AREA SURVEYED WHO POSSESS 10 ACRES OR MORE OF TIMBER, BY GROUP, EXPRESSED AS A PERCENTAGE OF OWNERS OF THE LAND AREA IN THIS CATEGORY AND THE NUMBER OF OBSERVATIONS

Measure	Group 1		Group 2		Group 3		Group 4		Group 5		Group 6	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Use of Timber:												
Grazing	21	28.8	43	39.8	85	59.9	16	55.2	24	86.7	15	51.7
Commercial Production	36	49.3	14	13.0	37	26.1	1	3.4	4	11.1	2	6.8
Erosion Control	0		2	1.8	0		1	3.4	1	2.7	2	6.8
No Use	13	17.8	35	32.4	17	12.0	9	31.0	5	13.9	6	20.7
Investment	2	2.7	14	13.0	3	2.1	2	6.8	2	5.5	4	13.6
Planning to Convert Use of Timberland:												
Clear for Pasture	12	16.4	24	22.2	77	54.2	11	37.9	5	5.5	4	13.6
Clear for Crops	0		0		0		0		1	2.7	1	3.4
Another Forest Type	5	6.8	11	10.2	12	8.5	0		0		3	10.3
Type of Timber That Owner is Converting From:												
Pine	5	6.8	0		0		0		0		0	
Mixed Pine	1	1.4	5	4.6	6	4.2	0		0		0	
Bottomland	5	6.8	3	2.8	0		0		0		1	3.4
Post Oak and Blackjack	0		12	11.1	16	11.3	3	10.3	4	11.1	2	6.8
Type of Timber That Owner is Converting To:												
Pine	10	13.7	17	15.7	22	15.5	3	10.3	2	5.5	3	10.3
Mixed Pine	0		3	2.8	0		0		0		0	
Bottomland	0		0		0		0		2	5.5	0	
Post Oak and Blackjack	0		0		0		0		0		0	
Timber Sale(s) in the Last 5 Years:												
Yes	33	45.2	43	39.8	76	53.5	2	6.8	6	16.6	8	27.6
No	40	54.8	64	59.3	66	46.5	27	93.1	30	83.3	20	69.0
Number of Acres Sold:												
0 - 10	3	4.1	15	13.9	8	5.6	0		2	5.5	2	6.8
11 - 50	4	5.5	3	2.8	7	4.9	1	3.4	0		0	
51 - 100	2	2.7	6	5.6	25	17.6	0		2	5.5	4	13.6
101 - 500	4	5.5	16	14.8	5	3.5	0		2	5.5	0	
501 and more	20	27.4	3	2.8	29	20.4	0		0		0	
Distance from Harvest Location to Mill or Yard, in Miles:												
0 - 10	2	2.7	22	20.4	19	13.4	0		5	13.9	0	
11 - 25	4	5.5	9	8.3	10	7.0	2	6.8	0		2	6.8
26 - 50	9	12.3	6	5.6	17	12.0	0		0		2	6.8
51 and more	16	21.9	1	.9	31	21.8	0		0		0	
Physical Reasons for Selling Timber:												
Mature Timber	10	13.7	19	17.6	7	4.9	1	3.4	2	5.5	4	13.6
Commercial Thinning	20	27.4	18	16.7	26	18.3	0		2	5.5	0	
Convert to Other Forest Type	0		0		0		0		0		0	
Clear for Grazing or Crops	3	4.1	7	6.5	42	29.6	1	3.4	2	5.5	4	13.6

TABLE XVII (Continued)

Measure	Group 1		Group 2		Group 3		Group 4		Group 5		Group 6	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Economic Reasons for Selling Timber:												
Financially Mature	15	20.5	21	19.4	18	12.7	1	3.4	0		3	10.3
Meet Current Expenses	11	15.1	8	7.4	10	7.0	1	3.4	0		0	
Need Cash	5	6.8	6	5.6	2	1.4	0		4	11.1	4	13.6
Offered a High Price	1	1.4	8	7.4	43	30.3	0		0		1	3.4
Reason for NOT Selling Timber:												
Waiting for Higher Prices	5	6.8	9	8.3	4	2.8	3	10.3	4	11.1	2	6.8
Timber Too Small	14	19.2	16	14.8	23	16.2	11	37.9	12	33.3	7	24.1
Unfamiliar with Buyers	5	6.8	8	7.4	8	5.6	8	27.6	6	16.6	5	17.2
Market not Available	0		1	.9	11	7.7	3	10.3	0		1	3.4
Part of Management Plan	13	17.8	27	25.0	14	9.9	2	6.8	4	11.1	6	20.7
Previously Used Regeneration Techniques:												
Hand Planting	33	45.2	31	28.7	5	3.5	1	3.4	1	2.7	2	6.8
Machine Planting	15	20.5	0		0		0		2	5.5	0	
Direct Seeding	16	21.9	24	22.2	14	9.9	0		2	5.5	0	
Natural Regeneration	17	23.3	4	3.7	16	11.3	0		1	2.7	4	13.6
Number of Acres Regenerated:												
0 - 5	0		20	18.5	0		1	3.4	0		1	3.4
6 - 10	0		7	6.5	2	1.4	0		0		1	3.4
11 - 20	0		0		1	.7	0		0		0	
21 - 50	10	13.7	2	1.8	0		0		1	2.7	0	
51 - 100	2	2.7	0		4	2.8	0		0		0	
101 and more	7	9.6	4	3.7	9	6.5	0		2	5.5	0	
Number of Acres of Timber Stand Improvements Techniques in the Last 5 Years:												
Non-Commercial Thinning												
0 - 5	0		4	3.7	2	1.4	0		0		1	3.4
6 - 10	0		0		3	2.2	0		0		0	
11 - 20	1	1.4	5	4.6	4	2.8	0		0		0	
21 - 50	1	1.4	2	1.8	5	3.5	1	3.4	0		0	
51 - 100	0		1	.9	0		0		2	5.5	0	
101 and more	20	27.4	0		5	3.5	0		2	5.5	0	
Fertilization												
0 - 5	0		0		0		0		0		0	
6 - 10	0		0		0		0		1	2.7	0	
11 - 20	0		0		0		0		0		0	
21 - 50	0		0		0		0		0		0	
51 - 100	15	20.5	0		0		0		0		0	
101 and more	0		0		0		0		0		0	
Pruning												
0 - 5	0		0		0		0		0		0	
6 - 10	15	20.5	0		0		0		0		0	

TABLE XVII (Continued)

Measure	Group 1		Group 2		Group 3		Group 4		Group 5		Group 6	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
11 - 20	1	1.4	0		0		0		0		0	
21 - 50	0		0		0		0		0		0	
51 - 100	0		0		0		0		0		0	
101 and more	0		0		0		0		0		0	
Prescribed Burning												
0 - 5	0		0		0		0		0		0	
6 - 10	0		0		1	.7	0		1	2.7	0	
11 - 20	3	4.1	0		0		0		0		0	
21 - 50	6	8.2	0		0		0		0		0	
51 - 100	0		0		0		0		1	2.7	0	
101 and more	15	20.5	1	.9	2	1.4	0		0		0	
Herbicide Application												
0 - 5	3	4.1	1	.9	0		0		0		0	
6 - 10	0		0		3	2.1	1	3.4	0		0	
11 - 20	0		0		0		0		0		0	
21 - 50	0		3	2.8	2	1.4	0		0		1	3.4
51 - 100	3	4.1	0		3	2.1	0		0		0	
101 and more	26	35.6	0		21	14.8	0		0		0	
Difficulty in Obtaining Loans for Forestry Activities:												
Yes	1	1.4	21	19.4	13	9.2	1	3.4	2	5.5	8	27.6
No	72	98.6	76	70.4	119	83.8	25	86.2	28	77.8	20	69.0

more of timber. The response patterns resulting from grouping are as follows:

1. No major differences in education, income, land tenure, or occupations appeared as a result of grouping owners of the land area in this category (category being 10 plus acres of timber), except that Muskogee county, (Group 4, medium agricultural income) differed in socioeconomic characteristics from the other groups among these measures (Table XIV).

2. Muskogee, Pittsburg, Ottawa, and McCurtain counties (Groups 1, 4, 5) have the highest percentage of absentee land area ownerships (in descending order) (Table XIV).

3. Owners of the land area in this category are less neutral or undecided in Groups 1 (high industrial), 2 (mountain forest), and 3 (low agricultural income) concerning forestry practices than owners not in this category (10 plus acres of timber). Groups 4 (medium agricultural income), 5 (non-farm, non-industrial), and 6 (urban county ownerships) owners of the land area in this category are more neutral than Groups 1, 2, and 3 (Table XV). Again this displays how forestry attitudes relate to the intensity of commercial forestry.

4. McCurtain county owners of the land area in this category lean toward commercial forest management more than any other group, but are the least desirous for forestry assistance (Table XVI).

5. Group 3 (low agricultural income) ownerships in this land area category provided the greatest number of timber sales, followed by McCurtain county (Group 1) and mountain forest ownership counties (Group 2) (Table XVII). Harvested timber haul distances in Groups 2 and 3 were shorter than those in Group 1, possibly reflecting higher timber values coming from more intense private non-industrial forest management. But 29.6 percent of Group 3 owners of the land area in this category sold timber in order to clear the land; whereas the others sold timber more for its fiber values (Table XVII).

6. McCurtain county (Group 1) had by far the largest timber regeneration/planting and "TSI" acreages than any other group (Table XVII).

As a consequence of these breakdowns many land base owner descriptions stand out. These are:

1. Muskogee county not only has major land area ownership distinctions, but the owners of this land area do not see the applicability of this research to their situation.

2. The locale of land base ownerships with respect to wood markets relates to many attitudes and management objectives.

3. The prevalence of pine varies with an owner's land management behavior.

From the above presentation of results, one might ask are there cause and effect relationships? How do landowners act in common or separately? As one delves into the survey results, questions are raised faster than can be explained or reasoned out. The following analyses are presented to serve as a guide in wading through the plethora of information.

CHAPTER IV

ANALYSIS OF RESULTS

Stability of Active Commercial Forest Management

Stepwise multiple dummy regression analysis was applied to measure the stability of commercial forest management presently employed on land area ownerships containing 10 acres or more of timber. Two regression models were developed (Table XVIII): one analyzing the variation of chances for commercial forest management (Model 1) and the other chances for tree planting (Model 2). The dependent variable in each of these was regressed against an independent variable set which dichotomizes landowners on measures of current commercial forest management. The initial independent variable set included all those which measure land management activites.

Relating past and present management practices (independent variables) to the measures of commercial management potential (dependents) provides a measure of commercial forest management trend. The first model was an explicit measure of commercial management stability, for the respondent was directly asked to quantify the likelihood of initiating or continuing commercial forest management.

TABLE XVIII

ACTIVITIES MEASURING STABILITY OF ACTIVE COMMERCIAL FOREST MANAGEMENT

Current Forest Uses and Practices[a]	Standard Beta[c]	Partial F[b]	R^2
Model 1 - Chances for Commercial Management of Timber (σ=33.6%)			
Past Use of Forest Regeneration	.521	285.96	.443
Sale of Timber in the last 5 years	.182	22.67	.476
Past Use of "TSI" Techniques	.099	9.63	.490
Current Primary Use	.063	2.05	.492
Model 2 - Chances for Planting Trees in the Next 5 Years (σ=34.1%)			
Past Use of Forest Regeneration	.400	129.46	.263
Past Use of "TSI" Techniques	.349	77.15	.392
Current Primary Use	.060	1.54	.395

[a]Refer to Table XXXI, Appendix C for variable codes.

[b]Partial F values significant at least at the .1 probability level.

[c]The reader is reminded that standardized betas are used to indicate relative importance of the independent variables.

Whereas the second model, in which the respondent was asked to quantify the likelihood of planting trees in the next five years, is intended as a measure of the long-term trend in commercial forest management.

Model 1 indicates that the final (statistically significant) measures of current commercial management had a positive relation with the likelihood of future forest management (the independent variables were designed so that a two indicated the use of the particular practice and a one indicated non-use). The first independent variable (past use of forest regeneration or planting) indicates strongly that previous timber plantings are intended for commercial harvesting, having a standardized beta of .521. Due to the strength of this relationship, additional explanatory power from the remaining variables is dramatically reduced. However, these remaining commercial forest management measures still demonstrate additional explanation that is statistically significant. The overall variation explained in the model was 50 percent.

The second model verifies this positive relationship. The difference between the two models is that the second lacks the variable of past timber sales (due to an insignificant partial F), and in general explains slightly less overall variation. The absence of this variable in the second model and its presence in the first suggests landowners with a history of disinterest or disinclination toward harvesting timber may be willing to plant trees, but not necessarily

for commercial purposes. This is supported by the low standardized beta of current commercial forest management (.060), explaining little additional variation.

Also, significant correlations exist between past timber sellers and those who regenerated or planted (r=.526); and those who improved the timber stands (r=.332). Thus those who indicate intentions of commercial forest management tend to be those who sold timber under commercial management, regenerated it and improved it.

Summarizing, it can be said generally:

1. Owners of the land area in the category of having 10 acres or more of timber that have regenerated or planted are generally doing so for commercial purposes.
2. Those that have sold timber desire to continue doing so.
3. Owners of the land area in this category who improved the quality of their timber did so as a commercial forest management practice.
4. Current commercial forest managers indicate a greater likelihood of continuing to do so than do non-commercial forest owners.

Socioeconomic Characteristics Effecting Commercial Forest Management

Having observed indications of stability of the activities and practices involved with commercial forest management, the next step is to analyze the relationship between socioeconomic characteristics and the likelihood that forestland owners will accept the objective of commercial forest management. As before, the two regression models have dependent variables of (1) chances of commercial forest management, and (2) chances of tree planting (Table XIX). Based on

TABLE XIX

SOCIOECONOMIC CHARACTERISTICS OF THE LANDOWNER WHICH EFFECT THE CHANCES FOR COMMERCIAL TIMBER MANAGEMENT AND TREE PLANTING

Socioeconomics[a]	Standard Beta	Partial F[b]	R^2
Model 3 - Chances for Commercial Management of Timber (σ=33.5%)			
Total Timber Owned	.403	95.05	.210
Education	.204	18.65	.246
Model 4 - Chances for Planting Trees in the Next 5 Years (σ=33.8%)			
Total Timber Owned	.310	69.85	.161
Education	.227	25.62	.217
Land Tenure	-.103	3.77	.225
Income	.088	2.70	.231

[a]Refer to Table XXXI, Appendix C for variable codes.

[b]Partial F values significant at least at the .1 probability level.

correlation analysis, five socioeconomic characteristics (total timber owned, income, education, land tenure, and absenteeism) were chosen for this multiple regression.

In Model 3, total timber possessed by the landowner has the greatest deterministic effect on whether he is likely to use it for commercial sources. The amount of timber owned is positively related with chances for commercial forest management and explains 21 percent of the variation of this dependent variable. The amount of education, also positively related, explains an additional four percent. The other socioeconomic variables did not enter the regression equation; although all but length of land tenure had significant positive correlations with chances for commercial forest management. This occurred because total timber owned has such a strong relationship with chances for commercial forest management. These other variables could explain little additional variation.

Model 4 shows the same initial independent variable priority and relation direction as in Model 3, but with additional independent variables. And the dependent variation between the two models is nearly the same. It appears that owners of smaller timber land holdings are attracted to planting trees but not commercial timber use. Land tenure which was previously insignificant is significant, negatively, with likelihood for tree planting. Also income is now significant having a positive relationship with chances for tree planting. Therefore people with higher incomes are apparently more willing to invest in tree planting. Overall, less variation in

chances for tree planting was explained, although more socioeconomic characteristics entered as significant variables. Here again, one discerns the greater difficulty in defining the type of landowner that will plant trees relative to the simpler picture of the commercially-prone forest manager.

These results imply the following:

1. The more timber one owns, the more likely he is to use it commercially and the more inclined he is toward additional timber planting or regeneration.

2. The more educated the more likely he is to adopt commercial forestry objectives and to plant trees.

3. Newer owners of the land area are more inclined to plant trees than are older owners.

4. Wealthier owners of the land area are more willing to undertake tree planting as an investment than are landowners with lower incomes.

From personal contact with many of these landowners by telephone it is this researcher's impression that age did affect to some degree one's receptiveness to management change from the status quo. More intense research into this topic would be needed before arriving any definite conclusions, but this survey's results seems to support this theory.

Trends Associated with Owner's Land Tenure

Here several models were attempted in order to identify characteristics associated with an owner's land tenure (Table XX). Land tenure was regressed against all variables measuring landowners' socioeconomic characteristics. Of these, the only significant model contained

TABLE XX

CHARACTERISTICS AND TRENDS ASSOCIATED WITH LENGTH OF OWNER'S LAND TENURE

Characteristics	Standard Beta	Partial F	R^2
Model 5 - Land Tenure ($\bar{x}$=16.2 yrs)			
Income	.174	11.30	.031

the single variable of income which was positively related to land tenure. Education did not enter indicating its relationships to length of tenure is weak, once the effects of income are removed. Absenteeism did relate significantly to land tenure (r=.086) but lacked additional explanatory power. A noteable exception to these results was the slightly higher correlation of ownership's timber type distinctions (pine, bottomland hardwoods, and post oak/blackjack) associated with land tenure (-.152, .239, -.167, respectively). Significant multi-colinearity between types of timber owned and income along with the very large variation in tenure seemed to be the primary cause for timber ownership distinction's absence from the model.

The following tendencies are evidenced:

1. The greater one's land tenure, the more income he seems to have.

2. Newer owners of the land area tend to own more pine and post oak/blackjack and less bottomland hardwoods than owners with greater land tenure.

Attitudes Toward Commercial Forest Management

Here, the objective is to determine what landowner characteristics relate to and/or effect one's attitudes toward two controversial forest management practices--prescribed burning and and clearcutting. Both regression and discriminant analysis were used in an attempt to identify potential relationships between both land management practices and attitudes, and socioeconomic characteristics and attitudes. A five level Likert scale was used in measuring respondent forestry attitudes (see Appendix A). A Likert scale value of one indicates strong disagreement and a five indicates strong agreement. Discriminant analysis, was attempted first. The analysis did reveal differences among landowner attitudes based on the independent variable set. But the differences were not in a monotonically or linearly increasing or decreasing order, or in any interpretable pattern. Therefore regression analysis was used to identify potential relationships (Tables XXI and XXII).

The Pearson correlations (Table XXX, Appendix B) show significant relationships between attitudes and socioeconomic characteristics and activities. These include prescribed burning, past use, "TSI" practices, past sale(s) of timber, income, education, and total timber acreage owned. These measures comprised the independent variables attempted.

TABLE XXI

ATTITUDES TOWARD PRESCRIBED BURNING

Variable[a]	Standard Beta	Partial F[b]	R^2
Model 6 - Socioeconomics of Prescribed Burning (σ=.7 Likert units)			
Total Timber Owned	.319	24.68	.064
Income	-.244	16.24	.104
Education	.080	2.12	.109
Model 7 - Activities Related to Prescribed Burning (σ=.7 Likert units)			
Sale(s) of Timber in the Last 5 Years	.169	19.58	.047
Current Commercial Forest Use	.085	5.35	.060
Past Use of "TSI" Techniques	.080	2.07	.064

[a]Refer to Table XXXI, Appendix C for variable codes.

[b]Partial F values significant at least at the .1 probability level.

TABLE XXII

ATTITUDES TOWARD CLEARCUTTING

Variable[a]	Standard Beta	Partial F[b]	R^2
Model 8 - Socioeconomics of Clearcutting (σ=.9 Likert units)			
Total Timber Owned	.256	13.92	.032
Income	-.172	12.92	.061
Model 9 - Activities Related to Clearcutting (σ=.9 Likert units)			
Current Commercial Forest Use	.171	16.95	.045
Sales(s) of Timber in the last 5 Years	.160	9.31	.069

[a]Refer to Table XXXI, Appendix C for variable codes.

[b]Partial F values significant at least at the .1 probability level.

The socioeconomic variables that possessed statistically significant explanatory power were total timber owned, income and education. And those in Model 7 were sales of timber, current commercial forest use, and "TSI" practices (Table XXI). Even though significant partial F values were indicated, the relatively low coefficient of determination in both models demonstrates the difficulty in isolating an explanation of why a person "feels" the way he does. This was also true of the analysis of attitudes toward clearcutting. Moreover, multi-colinearity had a detrimental explanatory impact among variables which measured past land management practices and socioeconomic characteristics, e.g., income with education. The point to be emphasized is that these listed characteristics do appear to relate to and effect the landowner's attitudes but not in an orderly, distinct manner. Many other personal and societal variables potentially enter in (e.g., popularity of certain opinions, familiars, peer pressure) that what remains is simply the enigma surrounding the uniqueness of landowners. In interpreting the sample relationships, the tendencies can be summarized as follows:

1. Owners of the land area having sold timber in the last five years tend to agree with the practices of prescribed burning and clearcutting.

2. Those that currently utilize their timber for commercial purposes also tend to agree with these practices.

3. The more timber one owns the more he seemed to agree with these practices. This relationship was not affected by the type of timber owned.

4. More educated owners of land area in the category of having 10 acres or more of timber, agreed with prescribed burning; whereas attitudes toward clearcutting were unrelated to education.

5. Low income owners of the land area in this category agreed with prescribed burning and clearcutting more so than higher income owners.

Characteristics of the owner of the land area having 10 acres or more of timber, seemed consistent with respect to both practices, except for income and education. Also because the attitudinal relationships are consistent with current land practices, the conclusions are supported regarding the socioeconomic differences of forest-owner attitudes.

Timber Owners vs. Non-Timbered Owners

Multiple discriminant analysis provides the statistical base for all discussion hereafter. Each dichotomy was discriminated, subject to all correlated measures of socioeconomic characteristics, land management attitudes and objectives. In this case, the purpose was to determine if significant differences existed between land area owners who have 10 acres or more of timber and land area owners who have no timber, and what the implications of any differences are. The stepwise discriminant procedure produced a socioeconomic model showing relative differences of landowners' income, education, and land tenure according to whether they own timber (Table XXIII). Model 10 indicates that income is the major differentiator among timber and non-timber owners. Timber owners seem to have higher incomes, possibly a result of the additional alternative uses of a timber resource. However, this model does not appear to be a particularly strong differentiator on these bases, since it correctly classified individuals about as well as by chance. This fact is also verified by the canonical correlation (.226).

TABLE XXIII

DISTINGUISHING CHARACTERISTICS OF LAND AREA OWNERS
WHO OWN 10 ACRES OR MORE OF TIMBER

Variable[a]	Own Timber n=393 $\bar{X}$	Do Not Own Timber n=121 $\bar{X}$	Partial F[b]
Model 10 - Socioeconomics			
Income	$18,274.81	$13,396.69	20.53
Education	12.76 yrs.	12.70 yrs.	4.29
Land Tenure	27.00 yrs.	24.10 yrs.	2.31
Model 11 - Land Management Attitudes and Objectives			
Attitude Toward Timber Thinning	3.89	3.60	14.28
Chances for Planting Trees within 5 Years	31.49%	18.95%	5.27

[a]Refer to Table XXXI, Appendix C for variable codes.

[b]Partial F values significant at least at the .1 probability level.

Model 11 does about the same job in explaining differences between timber and non-timbered owners according to forest management attitudes and objectives. It presents evidence that timber owners agree more with thinning a timber stand and are more likely to plant trees in the next five years.

The following relationships are indicated:

1. Timber owners of the land area tend to have higher incomes.
2. Timber owners of the land area tend to be slightly more educated.
3. The average timber owner of the land area has been a landowner slightly longer than non-timbered landowners.
4. Timber owners of the land area approve of timber thinning slightly moreso than do non-timbered owners.
5. Timber owners of the land area are more likely to plant trees in the near future than non-timbered owners.

Absentees vs. Those Living on Property

One significant point that resulted from the survey was the high percentage of the sample land area that was in absentee ownerships containing 10 acres or more of timber (approximately 45 percent). Since this category of private non-industrial landowners represents such a large portion of the land area of eastern Oklahoma, knowledge of any differentiating characteristics or activities would definitely aid in the evaluation of this group's impact on the regional economy and future wood supply.

It appears that absentees and those who live on their forested tract differ with varying degrees, by total timber owned, education, income, pine owned, and land tenure in this order of additional

TABLE XXIV

DISTINGUISHING CHARACTERISTICS OF ABSENTEE OWNERS
OF THE LAND AREA WHOSE PROPERTIES CONTAIN
10 ACRES OR MORE OF TIMBER

Variable[a]	Absentee n=182 $\bar{X}$	Live-on Property n=205 $\bar{X}$	Partial F[b]
Model 12 - Socioeconomics			
Total Timber Owned	4899.6 ac	859.3 ac	41.78
Education	14.22 yrs	11.42 yrs	26.42
Income	$21,343.40	$15,612.20	4.27
Pine/Mixed Pine Owned	2096.1 ac	569.8 ac	2.80
Land Tenure	28.60 yrs	36.69 yrs	2.20
Model 13 - Land Management Attitudes and Objectives			
Chances for Planting Trees	38.79%	24.34%	13.49
Chances for Commercial Forest Management	40.39%	25.22%	2.91

[a]Refer to Table XXXI, Appendix C for variable codes.

[b]Partial F values significant at least at the .1 probability level.

differentiating power (Table XXIV). Absentees owned significantly greater amounts of timber. The large, but equal, variance in timber acres owned accounted for the comparatively low F-value for such a large mean difference. Education (higher among absentees) entered next explaining a large additional amount of variation. The remaining significant variables have little additional discriminating power. As a result of total timber owned and education distinctions and others, this model classified 16 percent more individuals correctly than expected through conditional probability. It also produced a reasonably strong canonical correlation of .420.

By comparison, segmentation of absentees was not as clear when considering land management attitudes and objectives. Although absentees seemed to consistently differ on objectives, the difference was not as great as in the socioeconomic model. Both groups apparently had similar attitudes with regards to forestry practices as evidenced by attitude variable absence from a mildly segmented model. Model 13 correctly classified 10 percent more forest owners than expected through conditional probability. But, the model's lack of distinct differentiation was confirmed by the low canonical correlation (.213). Absentees differ more according to their socioeconomic characteristics than by their attitudes and objectives.

The following are general tendencies:

1. Absentee timber owners of the land area have larger timber holdings.
2. Absentees in this category have more education.
3. Absentees in this category have higher incomes.

4. Absentees in this category have owned their timber longer than those who live on their timbered property.

5. Absentees in this category are more inclined to plant trees.

6. Also absentees in this category are more inclined toward commercial forest management.

Commercial Forest Managers vs. Non-Commercial Forest Managers

This analysis identifies those characteristics that distinguish the landowner who is presently managing his timber for commercial use. As will be seen, these characteristics are those which also contribute to the stability of commercial forest management through time. Again two models were developed, the first to group commercial/non-commercial managers according to their socioeconomic characteristics, and the second by their forest management attitudes and objectives (Table XXV).

Model 14 produced fairly distinct differences between these two types of landowners based on, first (and again) total timber owned, absenteeism, and education. Commercial managers apparently own much more timber, tend to be absentee and tend to be more educated compared to non-commercial managers. The amount of variance explained by the amount of timber owned was quite significant as seen by the parital F of 86.83 and the large differences in mean timber acres. Absenteeism also played a significant part in distinguishing between these groups, along with education. But by far the most important was amount of timber owned. Economies in capital budgeting supports this premise, since larger landholdings having higher income owners are the conditions needed to afford long-term investments in timber.

TABLE XXV

DISTINGUISHING CHARACTERISTICS OF LAND AREA OWNERS POSSESSING 10 ACRES OR MORE OF TIMBER WHO ARE CURRENTLY MANAGING THEIR TIMBER RESOURCE FOR COMMERCIAL PURPOSES

Variable[a]	Commercial Managers n=78 $\bar{X}$	Non-Commercial Managers n=294 $\bar{X}$	Partial F[b]
Model 14 - Socioeconomics			
Total Timber Owned	4473.57 ac	894.30 ac	86.83
Absenteeism	1.47	1.37	19.24
Education	12.80 yrs	11.47 yrs	6.60
Model 15 - Land Management Attitudes and Objectives			
Chances for Commercial Forest Management	71.67%	18.38%	138.54
Attitude Toward Prescribed Burning	3.33	3.03	7.54
Attitude Toward Clearcutting	3.14	2.96	2.76

[a]Refer to Table XXXI, Appendix C for variable codes.

[b]Partial F values significant at least at the .1 probability level.

There were no apparent violations of the assumptions of discriminant analysis in either model. It should be noted that income level had no importance in these groupings; although income was significantly correlated with the binary variable of commercial use vs. non-use (r=.223). Slight multi-colinearity with education, along with a low correlation relative to those already in the model, could be an explanation for its absence. In general, the model did a good job in group separation, since the canonical correlation is relatively high (.494).

Model 15 demonstrates what attitudes and objectives are likely basic to commercial forest managers. Here again, it is strongly verified, by a partial F of 138.54, that the commercial forest managers will retain commercial forestry as their objective. Commercial forest managers agree more with prescribed burning and clear-cutting practices. Both socioeconomic characteristics and forest management attitudes and objectives prove to be helpful measures in differentiating commercial and non-commercial timber managers.

Conjecture on the above relationships is as follows:

1. The average commercial forest manager of the land area owns more timber than the average non-commercial managers.
2. The commercial forest managers of the land area tend to be absentee moreso than non-commercial managers.
3. On the average, commercial forest managers of the land area tend to be more educated.
4. Those presently operating as commercial forest managers are more inclined to manage commercially in the future than are those who presently are non-commercial managers.
5. Commercial forest managers of the land area generally approve more of prescribed burning than do other types of landowners.

6. Commercial forest managers of the land area generally approve more of clearcutting than do others.

Timber Selers vs. Non-Sellers

In this analysis, the discriminating power of the amount of timber owned is again great where timber sellers own larger amounts of timber (Table XXVI). This is consistent with practical thinking, since one would expect commercial forest managers to be the people who have sold timber in the last five years. Amount of timber owned is the only socioeconomic characteristic of landowners that significantly relates to one's history of selling timber.

Landowner attitudes and objectives, have a more significant aggregate discriminating effect. A strong relationship identified in Model 17 is that a background of timber sales evokes greater commercial forest management potential. This supports a previous conclusion that owners with a history of timber sales were apparently not disenchanted with commercial forest management and are likely to continue managing their land and timber in this way. Clear differences also exist between these owners on attitudes toward prescribed burning and clear-cutting and on tree planting potential. The strength of the model is demonstrated by the fact that it correctly clasified 21 percent more individuals than would be expected from conditional probabilities.

Therefore, in general, the following statements have support:

1. Owners of the land area who sell timber generally have larger land holdings.

2. Timber sellers are more likely to have commercial timber management as a future objective than those lacking a history of timber sales.

TABLE XXVI

DISTINGUISHING CHARACTERISTICS OF LAND AREA OWNERS POSSESSING 10 ACRES OR MORE OF TIMBER WHO SOLD TIMBER IN THE LAST FIVE YEARS

Variable[a]	Sellers n=156 $\bar{X}$	Non-Sellers n=231 $\bar{X}$	Partial F[b]
Model 16 - Socioeconomics			
Total Timber Owned	5978.4 ac	365.2 ac	86.88
Model 17 - Land Management Attitudes and Objectives			
Chances for Commercial Forest Management	58.46%	18.58%	124.71
Attitude Toward Clearcutting	3.25	2.87	17.16
Chances for Planting Trees in the Next 5 Years	49.74%	18.83%	11.34
Attitude Toward Prescribed Burning	3.37	2.94	5.90

[a]Refer to Table XXXI, Appendix C for variable codes.

[b]Partial F values significant at least at the .1 probability level.

3. In general those that have harvested timber approve of clearcut harvests.

4. Past timber sellers are more inclined to plant trees than non-sellers, an amiable trend for proponents of increasing future wood supplies from private non-industrial lands.

5. Timber sellers agree with prescribed timber burning.

Owners Who Regenerated vs. Owners Who Did Not

As an integral part of the discussions surrounding past and future forest management is the question, how have previous timber plantings been used? To answer this question, the same general models were constructed as before. The result is two clearly discriminating models (Table XXVII). The first, again, bases the discrimination on the landowner's socioeconomic characteristics. Here again, the amount of timber owned stands out as the major differentiating criteria for landowners with histories of timber regeneration or planting. Education also plays an important role in affecting membership in these groups (timber owners of the land area who have previously regenerated or planted timber have significantly larger timber holdings and more education). Although income was significantly related to this regeneration dichotomy (r=.265), it did not possess sufficient additional explanatory power in light of the variables already included, possibly because of multi-colinearity with education. Inasmuch as more capital is required for planting or regeneration, this fact is mollified by financial assistance available from federal, state, or industry sectors. In general, the socioeconomic characteristics of

TABLE XXVII

DISTINGUISHING CHARACTERISTICS OF LAND AREA OWNERS POSSESSING 10 ACRES OR MORE OF TIMBER WHO HAVE PREVIOUSLY PLANTED OR REGENERATED TREES

Variable[a]	Regenerated n=111 $\bar{X}$	Non-Regenerated n=276 $\bar{X}$	Partial F[b]
Model 18 - Socioeconomics			
Total Timber Owned	7237.77 ac	958.23 ac	92.77
Education	15.30 yrs	11.70 yrs	35.09
Land Tenure	26.13 yrs	27.36 yrs	1.50
Model 19 - Land Management Attitudes and Objectives			
Chances for Commercial Forest Management	75.73%	15.40%	257.45
Attitude Toward Clearcutting	3.22	2.97	7.07

[a]Refer to Table XXXI, Appendix C for variable codes.

[b]Partial F values significant at least at the .1 probability level.

past timber regenerators clearly delineates differences from those not having done so. In fact, the model correctly classified 17 percent more cases than would be expected by conditional probability. The discriminant equation fit well according to performance in classifying individuals as confirmed by the high canonical correlation (.514).

Model 19 identified an additional important point. It shows that landowners with a history of tree planting or regeneration have a very great potential for future commercial forest management (partial F=275.45). This relationship and the associated equivalent normal distributions, imply that previous timber regeneration or plantings was done for commercial application. This tremendously significant relation dominates all other relationships possessing additional explanatory strength. The power of this differentiation is evidenced by the very large discriminant function canonical correlation (.637) and correctly classifying 26 percent more individuals than by chance.

The following general tendencies were developed:

1. The average timber owner (having 10 acres or more of timber) of the land area who regenerated timber, owned more timber than those who did not regenerate.

2. The average timber owner of the land area that planted or regenerated timber was more educated than other timber owners.

3. Those who regenerated or planted timber have owned timber generally longer than those who have not planted or regenerated.

4. Private non-industrial timber owners of the land area with a background in timber regeneration or planting are more likely to use their timber for commercial purposes than those who have not recently done so.

5. The average timber owner of the land area who has regenerated or planted timber approves of clearcutting more than do others.

Owners Who Used Timber Stand Improvement Techniques vs. Owners Who Did Not

One of the best measures of the level of forest management intensity is the degree to which timber stand improvement techniques are employed when warranted. Landowners were discriminated on this variable to characterize those who have demonstrated a propensity for this management technique (Table XXVIII). As usual, the amount of timberland owned has by far the greatest discriminant explanatory power in the socioeconomic model. Furthermore, the effects of the landowner's income have discriminating precedence over education and others. The result is that timber owners of the land area who have improved their timber stands have much larger timber acreages and incomes than those who did not improve their timber, an expected result. The model priority of income suggests that additional capital outlays are often required to carry out many timber stand improvement techniques such as herbicide application, fertilization, pruning, prescribed burning and particularly non-commercial thinnings. The socioeconomic model shows good group separation qualities, i.e., a very high canonical correlation (.511) along with correctly classifying 15 percent more than expected by conditional probability.

Model 21, which tests for attitude and management objective differences, has somewhat less discriminatory power. Owners having improved their timber were highly inclined toward commercial timber use and apparently regard prescribed burning as a good "TSI" practice. This model correctly classifies barely more than by chance, but still retains a reasonably good canonical correlation. Also this model's

TABLE XXVIII

DISTINGUISHING CHARACTERISTICS OF LAND AREA OWNERS POSSESSING 10 ACRES OR MORE OF TIMBER WHO HAVE PREVIOUSLY UTILIZED TIMBER STAND IMPROVEMENT TECHNIQUES

Variable[a]	TSI n=66 $\bar{X}$	Non-TSI n=321 $\bar{X}$	Partial F[b]
Model 20 - Socioeconomics			
Total Timber Owned	9496.59 ac	1374.11 ac	111.55
Income	$26,287.87	$16,666.66	18.86
Model 21 - Land Management Attitudes and Objectives			
Chances for Commercial Forest Management	63.02%	26.29%	42.67
Attitude Toward Prescribed Burning	3.48	3.07	7.45

[a]Refer to Table XXXI, Appendix C for variable codes.

[b]Partial F values significant at least at the .1 probability level.

weakness is seen in the additional explanatory power in discrimination of chances for commercial forest management (F=42.67) and attitude toward prescribed burning (F=7.45).

Therefore, the socioeconomic characteristics of the landowner (total timber owned and income) have the greatest relationship to likelihood that timber stand improvement techniques will be adopted.

Generalized tendencies can be made as follows:

1. The average timber owner (having 10 acres or more of timber) of the land area who has used timber stand improvement techniques owns more timber than those who have not done "TSI".

2. The average timber owner of the land area who has used timber stand improvement techniques has a higher household income than those who have not done "TSI".

3. Timber owners of the land area who have improved the commercial quality of their timber stands are more interested in commercial forest utilization than those who have not used "TSI".

4. Those who have used timber stand improvement techniques approve of prescribed burning moreso than do others.

Owners Who Desire Forestry Assistance vs. Owners Who Do Not

This final analysis was undertaken to determine if landowners who desire forestry assistance have unique characteristics. The discriminant analysis shows that the level of education is significantly higher among those who desire assistance than those who do not (Table XXIX). The high partial F indicates the amount of discriminating power this characteristic possesses.

TABLE XXIX

DISTINGUISHING CHARACTERISTICS OF LAND AREA OWNERS POSSESSING 10 ACRES OR MORE OF TIMBER WHO DESIRE FORESTRY ASSISTANCE

Variable[a]	Desire Assistance n=98 $\bar{X}$	No Assistance Desired n=285 $\bar{X}$	Partial F[b]
Model 22 - Socioeconomics			
Education	15.50 yrs	11.74 yrs	58.48
Total Timber Owned	2312.9 ac	2950.4 ac	8.88
Model 23 - Land Management Attitudes and Objectives			
Chances for Commercial Forest Management	52.37%	26.32%	27.54

[a]Refer to Table XXXI, Appendix C for variable codes.

[b]Partial F values significant at least at the .1 probability level.

Total timber owned is revealed as a mildly important ownership characteristic. However, here the group mean difference of total timber owned is small compared to the much more dramatic timber ownership differences exhibited in previous analyses. What is even more significant, but expected, is that those who desire assistance have less timber on the average. This is consistent with conclusions regarding the size of timber ownership's effect on active and potential commercial forest management. Landowners owning small amounts of timber generally have lower incomes (r=.334) and apparently cannot afford the costs and investment risks of commercial management without financial assistance. In addition owners of very large amounts of land are generally ineligible for federal assistance.

In Model 23, only one management objective was found to have significant differentiating power--chances for commercial forest management (those desiring assistance indicate a greater likelihood of beginning commercial forest management than those not desiring assistance). This distinction indicates that any assistance obtained may eventually be seen as an investment toward the future wood supply on private non-industrial landholdings. The absence of attitudinal differences shows that these individuals are not simply those who already approve of controversial forestry practices.

Conjectural interpretations of these results are as follows:

1. Timber owners of the land area that desire forestry assistance are more educated than others.

2. Timber owners of the land area in this category desiring forestry assistance own less timber than others.

3. Timber owners of the land area desiring forestry assistance are likely to apply the resulting timber resource to commercial endeavors.

Undoubtedly, the reader will have further questions about these land base owners. No analysis can discover all relevant, significant relationships or hope to provide information to meet everyone's desires. For these reasons, a listing of the actual data set is provided in Appendix D. Three hundred and thirty cases with three data cards each are contained. Documentation is provided to interpret the numberics (Appendix E).

CHAPTER V

LANDOWNER COMPARISONS

Since this research survey is the first of its kind in eastern Oklahoma, no comparisons are possible to identify trends in landowner characteristics or practices. But useful comparisons can be made between the results of the characterization of eastern Oklahoma landowner with those from surveys in other states. Comparisons will be made among socioeconomic characteristics, attitudes and land management objectives. However, since this survey was based on a land area sample and many other surveys based on random selection of landowners, the reader is cautioned that many statistics are not exactly comparable.

In eastern Oklahoma, the owner of the average acre has 12.7 years of education (slightly more than high school) and the owners of 68 percent of the land base ownerships have at least a high school education. This figure is 69 percent for the land area in timberland ownerships. The study in Delaware (Kingsley, 1975) indicates less than 64 percent of the timber base landowners have less than a high school education. The study in Mississippi randomly surveyed tree farmers having between 20 and 500 acres of timber. Of these landowners, over one half have completed high school and 16 percent have finished two years of college, while only 11 percent stopped before going to high

school (Moak, 1973, p. 1). Of the 20 to 500 acre forest owners of the east Oklahoma land base, 69.1 percent had graduated from high school, and 38.9 percent had finished two years of college. These comparisons show that among the Southern states, Oklahoma land and forest owners appear to be at least as well educated. However, it should be pointed out that due to the sample base, the Oklahoma figures are slightly higher than would be obtained from all landowners since education and amount of timber owned are slightly positively correlated (r=.246).

The median income of the surveyed land area ownerships is $11,346 per year. Of Oklahoma's timber owners only 15.6 percent earned less than $5,000 (in 1976 dollars) per year and 39.5 percent earned over $25,000 (in 1976 dollars) or more per year. The Georgia survey was a one-stage area sample of 151 forest landowners which indicated that 30 percent of the forest owners earned less than $4,790 (in 1976 dollars) per year, 13 percent earned over $15,170 (in 1976 dollars), 29 percent reported incomes in the $7,585 to $15,170 bracket (Holemo, 1971, p. 5). Mississippi's landowners (in the 20 to 500 timbered acre class) had 25 percent earning over $14,121 (in 1976 dollars) per year. Of the 99.6 percent of eastern Oklahoma landowners responding to the income question, it appears that their incomes may be considerably higher than land and forest owners of other states. But again there is a positive correlation between income and amount of timber owned causing an upward bias on income.

The owner of the average east Oklahoma acre of timber has owned it for over 27 years, and this figure is nearly 27 years for the average acre of all land. The average eastern Oklahoma land area ownership having 10 acres or more of timber contains 735 acres of timber. In

Mississippi the average tenure was 24 years and the average number of forest acres owned (20 to 500 forest acre class) was 82. In the 1960 northern Idaho study (Frazer, 1960), 72 percent of the landowner census respondents owned their property less than 20 years, compared to 39.0 percent in eastern Oklahoma. Relatively speaking, Oklahoma land and forest owners appear to have longer land tenure than those of other states and regions.

Of the land base owners possessing 10 acres or more of timber in Oklahoma, 20.6 percent listed commercial wood production as the primary timber use. In Delaware, 17 percent of the timber base indicated this primary reason for owning it. Fifty-five percent of the tree farmers in Mississippi and 18 percent of the census respondents in northern Idaho listed this timber use. However, Mississippi's percentage would naturally be higher than Oklahoma's or others, since only tree farmers were sampled.

A final comparison considers attitudes toward clearcutting. A survey taken in Roscommon county, Michigan applied the Likert attitude scale regarding clearcutting (Langenau, et al 1977). However, respondents were sorted according to whether the landowner had seen a clearcut. Generally, the Michigan study concluded that people who had seen clearcuts were more opinionated than those who had not. Our survey did not measure attitudes by this breakdown, but it did indicate that most were undecided and the others mildly agreed.

Because of the tremendous variation in survey populations sampling methods, questions and measures among all the surveys done in other states and regions, unbiased comparisons are impossible. Though

sketchy, what has been presented here indicates Oklahoma landowners, relative to landowners in other states, have a similar socioeconomic status with perhaps slightly more education, income and longer land tenure. There is no great disparity between surveys in attitudes toward clearcutting. But land and timber use and management objectives are diffuse and seem to be highly effected by externalities.

CHAPTER VI

SUMMARY AND CONCLUSIONS

This research has sought to identify the characteristics, attitudes, and forest management objectives of the private non-industrial landowner of eastern Oklahoma. A land based sample survey was conducted and results presented on both a combined and county-grouped basis for both landowners and forest owners. As stated in the introduction, such information about the private non-industrial forest owners can enable one to refine projection of wood supply from these lands, and improve the effectiveness of private non-industrial forestry incentive, research, and information programs.

From the survey results and analysis, numerous important points stood out:

1. Sixty-nine percent of private non-industrial landowners of the land area have at least a high school education and 38.9 percent are college educated. Also 38.5 percent of these owners of the land area earn more than $20,000 per year. These well educated high income landowners own the larger tracts of timber and indicate greater inclination toward commercial forestry. The less educated lower income owners of small timber tracts have much less interest in commercial forestry. Therefore, financial incentive programs such as "FIP" may not have a significant effect on increasing the commercial timber resource on these lands. But having pointed out education's importance in landowner participation in incentive programs, a high percentage of well-educated owners of the land area might aid the receptiveness toward the potential benefits of commercial forest management.

2. Nearly half of the private non-industrial land area in timber ownerships is owned by absentees. Absentees are more educated, wealthier, owners of larger timber tracts (particularly pine tracts), and are inclined more toward tree planting and commercial forestry than those living on or near their timbered tracts. This result is contrary to McComb's conclusion of Georgia's private non-industrial landowners where generally absentee owners had more non-fiber values. Therefore, contrary to Georgia, programs and promotional campaigns in Oklahoma designed to increase wood supply may not be as effective if concentrated on the rural community.

3. Muskogee county landowners do not appear to relate to information or programs involving the development of their timbered resource. Possible causes for this behavior are: (1) greater land use values from other agricultural alternatives; (2) absence of wood markets; or (3) numerous small tracts of low valued timber.

4. Length of land tenure has little relationship with other socioeconomic characteristics, or forestry attitudes and objectives. Although land tenure and income are positively related, land tenure is not related to one's likelihood of entering commercial forest management.

5. Generally, the socioeconomic levels of education, income, land tenure, and occupation of owners of the land area are relatively consistent across all of the eastern counties excluding Muskogee owners who indicated higher levels for education and income. But, as expected, the frequency of owners stating commercial forestry objectives was not consistent across groups, increasing primarily in areas of developed wood markets and directly proportional to size of timber holdings.

6. Attitudes toward current forest management practices and their applications seem to follow the same pattern as commercial forestry objectives. The closeness of wood markets, more prevalent use of forestry practices, and increasing size of timber holdings seem to go along with owners of the land area who are less neutral and more inclined toward agreement with most forest management practices.

7. Current commercial forest managers indicate a greater chance for future commercial management than non-commercial forest owners. Owners of the land area who have previously planted or regenerated harvested timberland did so for commercial forest management purposes. These same owners tend to be the ones who improved the quality of their timber stands intending to sell it.

8. Finally, an interesting point is that over 80 percent of the private non-industrial owners of the land area were completely unfamiliar with Governor Boren's select committee's "Best Forest Management Practices Guidelines". The focus of this work was to provide timber management and harvesting guidelines to minimize stream sedimentation. Although almost 50 percent of the owners of McCurtain county's land area were familiar with these voluntary guidelines, other county owners were essentially completely unaware of them. This suggests that an education program is required, if the proponents of these voluntary guidelines are serious about reducing stream sedimentation.

For those interested in comparing landowners among different states, the owner of the average east Oklahoma acre can be described as having slightly more than a high school education (12.7 years), and a land tenure of not quite 27 years. The median income of ownerships of land area is $11,346 per year. The owner of the average acre leans toward agreement with presented forestry practices, and has 28 percent chance of planting trees in the next five years for economic reasons. The owner of the average acre belonging to ownerships including 10 acres or more of timber also has 12.7 years of education, a land tenure of slightly over 27 years, 735 acres of timber, generally agrees more with current forestry practices than non-timbered owners, has a 31.5 percent chance of tree planting in the next five years for a slightly greater variety of reasons than economic, and has a 32 percent chance of initiating and/or continuing commercial timber management. The median income of timber ownerships of the land area is $12,732 per year.

There is no question that even without external input or prodding, timber from these private non-industrial lands will be marketed. But will it be marketed at the quantity, rate, and time horizon needed by wood industry to supply the fiber demands in the long run? The summary

and conclusions presented here may provide a little more insight in answering this question.

This research should be viewed as the initial effort to identify significant relationships in Oklahoma landowner characteristics, attitudes and objectives. There is still much work to be done with both analysis of information in this study and new, more specialized landowner surveys. Because of the enormous amount of information from a generalized survey such as this and the limited amount of space to present information, many relationships remain to be analyzed. Also many landowner parameters were not sampled as intensively (producing construct validility) as required for more conclusive inferences. Some areas available for further research and analysis are:

1. Analysis of relationships involving landowner motivations (i.e., questions 6, 9, 19, and 20, Appendix A).
2. Application of analysis used in this paper to data within each of the six county groups to further clarify the effects of location of land ownerships.
3. Questions that ask for landowner age, and size of total ownership.
4. Surveys with greater attention given to measuring the complex relationships of landowner forestry attitudes and objectives.

LITERATURE CITED

Carothers, J. E. and H. C. Smith. 1977. Land use patterns on properties in Louisiana. La. Tech. Univ. School of Forestry Bull. 10, Ruston, La., 39 pp.

Christensen, W. W. 1957. Methodology for investigating forest owners management objectives. Ph. D. Dissertation. State Univ. College of Forestry at Syracuse Univ., Syracuse, N. Y.

Dillman, D. A., J. A. Christenson, E. H. Carpenter, and R. M. Brooks. 1974. Increasing mail questionnaire response in large samples of the general public: a four state comparison. unpub. Scientific Paper of the Washington Ag. Research Center, Pullman, Washington, 19 pp.

Draper, N. R. and H. Smith. 1966. Applied regression analysis. John Wiley and Sons, Inc., New York, 407 pp.

Earles, J. M. 1975. Forest statistics for eastern Oklahoma counties. U. S. D. A. Forest Service So. For. Exp. Sta. Bull. SO-62, New Orleans, La., 40 pp.

Frazer, G. D. 1960. Small non-industrial forest owners in northern Idaho. Idaho Ag. Exp. Sta. Bull. 317, Moscow, Idaho, 29 pp.

Glascock, H. R., Jr. 1977. NIPF workshop surfaces policy alternatives J. of Forestry, 75: 692.

Green, P. E. and D. S. Tull. 1975. Research for marketing decisions. Prentice-Hall, Inc., Englewood Cliffs, N. J., 786 pp.

Holemo, F. J. and P. J. Dyson. 1971. Landowner attitudes and practices concerning timber production and marketing in the Piedmont Region of Georgia. Ga. For. Research Paper 66, Macon, Ga., 11 pp.

Hughes, G. D. 1967. Selecting scales to measure attitude change. J. of Marketing Research, 5: 285-289.

Kingsley, N. P. and J. C. Finley. 1975. The forest-land owners of Delaware. U. S. D. A. Northeastern For. Exp. Sta. Bull. NE-38, Upper Darby, Pa., 19 pp.

Kingsley, N. P. 1976. The forest-land owners of southern New England. U. S. D. A. Northeastern For. Exp. Sta. Bull. NE-41, Upper Darby, Pa., 18 pp.

Langenau, E. E., Jr., G. C. Jamsen and R. L. Levine. 1977. The stability of attitudes toward clearcutting among landowners in Roscommon County, Michigan. For. Sci., 23: 437-444.

Larsen, D. N. and D. A. Gansner. 1972. Pennsylvania's private woodland owners. U. S. D. A. Forest Service Northeastern For. Research Paper NE-219, Upper Darby, Pa., 8 pp.

McComb, W. H. 1975. Mismanagement by the small landowner: fact or fiction? J. of Forestry, 73: 225-227.

Moak, J. E. 1973. Some characteristics of private non-industrial forest landowners in Mississippi. Miss. Ag. and For. Exp. Sta. Info. Sheet 1214, Starkville, Miss., 2 pp.

Morrison, D. F. 1967. Multivariate statistical methods. McGraw-Hill, New York, 493 pp.

Murphy, P. A. 1977. East Oklahoma forests: trends and outlook. U. S. D. A. Forest Service So. For. Exp. Sta. Bull. SO-63, New Orleans, La., 20 pp.

Nie, N. H., C. H. Hull, J. G. Jenkins, K. Steinbrenner and D. H. Bent. 1975. Statistical package for the social sciences. McGraw-Hill, St. Louis, 675 pp.

Oehrtman, R. L. 1975. Objectives, motives, business style, and personal history--how they relate to managerial success. Southern J. of Ag. Econ. pp. 111-116.

Payne, S. 1956. Some advantages of telephone surveys. J. of Marketing, 20: 278-281.

Porterfield, R. L. and J. E. Moak. 1977. Timber management for non-industrial forest owners: a matter of perspective? Southern J. of Applied Forestry, 1: 2-6.

Schallau, C. H. 1964. Forest owners and timber management in Michigan. U. S. D. A. Forest Service Lake States Exp. Sta. Research Paper LS-9, St. Paul, Minn., 13 pp.

Somberg, S. I. 1971. Characteristics of private non-industrial forest landowners in Alabama. Auburn Univ. Ag. Exp. Sta. Circular 185, Auburn, Ala., 26 pp.

Sternitzke, H. S. and C. C. VanSickle. 1968. East Oklahoma forests. U. S. D. A. Forest Service So. For. Exp. Sta. Bull. SO-14, New Orleans, La., 32 pp.

Weaver, G. H. 1976. Forest resource dependency in the West Gulf Region. Ph. D. Dissertation. Texas A & M Univ., 84 pp. Univ. Microfilms, Ann Arbor, Mich. (Diss. Abstr. Int. Vol. 37: 1051-B).

APPENDIXES

APPENDIX A

SAMPLE QUESTIONNAIRE

CONFIDENTIAL

NAME_____ (optional)

OKLAHOMA FOREST OWNER QUESTIONNAIRE

COUNTY_____ (optional)

1. Do you own 10 acres or more of timber?_____
(If no, proceed to question 18 and complete questionnaire.)

2. Approximately how many acres of your timber holdings fall into the following forest types?

A. Pine (having greater than 75% pine) _____ Ac.
B. Mixed pine and hardwoods _____ Ac.
C. Bottomland hardwoods _____ Ac.
D. Post oak - blackjack oak _____ Ac.

3. What is the current primary use of your timber holdings?

( ) Grazing livestock
( ) Production of pulpwood, sawlogs, etc.
( ) Erosion control
( ) No use, land is idle
( ) Investment in land
( ) Other, specify_____

4. If you are planning to convert your timberland to another use:

A. Please indicate intended land use category.
( ) Clear for conversion to pasture
( ) Clear land for crop production
( ) Convert to another forest type
( ) Other, specify_____

B. What type of timber are you converting from?
( ) Pine
( ) Mixed pine & hardwoods
( ) Bottomland hardwoods
( ) Post oak - blackjack oak

C. What type of timber are you converting to?
( ) Pine
( ) Mixed pine & hardwoods
( ) Bottomland hardwoods
( ) Post oak - blackjack oak

5. Have you sold any timber in the last 5 years?_____
(If yes, proceed to question 7.)

6. If you did not sell, what was the reason?

( ) Waiting for higher prices
( ) Timber too small to market
( ) Unfamiliar with potential buyers
( ) Market not available
( ) Part of management plan
( ) Other, specify_____

7. What was the approximate volume and acreage involved in the sale? (If more than 1 sale in the last 5 years, please indicate approximate total of all sales.)

Volume_____
Acreage_____

8. What is the approximate distance in miles from site of sale to the mill of the buyer (if known)?_____miles

9. What were the primary physical and economic reasons that you sold your timber?

A. Primary physical reasons (check one)
( ) Mature timber
( ) Commercial thinning
( ) Convert to different forest type
( ) To clear land for grazing or crops
( ) Other, specify_____

B. Primary economic reasons (check one)
( ) Timber financially mature
( ) To meet current expenses
( ) Need for operating cash
( ) Offered a high price
( ) Other, specify_____

10. A. What primary regeneration techniques have you used?
( ) Hand planting
( ) Machine planting
( ) Seeding
( ) Natural regeneration
( ) None

B. Approximate number of acres regenerated?_____

11. What was the approximate number of acres on which you carried out the following "timber stand improvement" techniques in the last 5 years?

Non-commercial thinning _____ Ac.
Fertilization _____ Ac.
Pruning _____ Ac.
Prescribed burning _____ Ac.
Herbicide application _____ Ac.

12. Do you plan to make use of State, Federal, or industrial forestry assistance programs in the next 5 years?_____

13. Which of the following forestry assistance programs or other timber management aids have you used?

( ) State Division of Forestry (Service Foresters)
( ) Private industry landowner assistance
( ) Federal Financial Programs
( ) Other, specify_____

14. Have you had any trouble in obtaining capital, at reasonable interest rates, to carry out forestry management programs?_____

15. Do you live either on, or adjacent to your forested tract?_____

16. If not, what is the approximate average distance to your timber holdings?_____miles

17. What is the chance that you will begin managing your timberlands for commercial production? (If presently in commercial use, please indicate with an "X"_____.) (Circle One.)

Chance for Conversion

0% 10 20 30 40 50 60 70 80 90 100%

Check if Undecided ☐

OVER

18. What is the chance that you will plant trees in the next 5 years? (Circle One.)

Chance for Planting											Check if Undecided
0	10	20	30	40	50	60	70	80	90	100%	☐

19. If you were to plant trees in the next 5 years:

A. What would be the primary purpose?
( ) Increase land value
( ) Economic returns
( ) Wildlife habitat
( ) Erosion control
( ) Other, specify_____

20. If you do not plant trees in the next 5 years, what would be the main reason?

( ) No suitable land for planting trees
( ) Other use of land giving higher returns
( ) Insufficient capital available for planting
( ) Insufficient labor available for planting
( ) Insufficient information to make decision
( ) Land not in need of regeneration
( ) Other, specify_____

21. What is your attitude toward the way in which the following current timber management practices in your area are being done?

	Strongly Agree	Agree	Undecided Neutral	Disagree	Strongly Disagree
A. Thinning					
B. Prescribed burning					
C. Fertilization					
D. Logging road const.					
E. Clearcutting					

22. What is your opinion of the "Best Management Practices Guidelines" drawn up by Governor Boren's select committee on natural resources?

Unfamiliar	Strongly Agree	Agree	Undecided Neutral	Disagree	Strongly Disagree

23. Is your timber-producing land adequately fenced?_____

24. What year was the major portion of your land acquired?_____

25. How was the major portion of your land acquired?

( ) Purchase
( ) Homestead
( ) Inheritance

26. Please indicate the level of annual household income.

( ) Less than $5000
( ) $5000 - $ 7000
( ) $7000 - $ 9000
( ) $9000 - $12000
( ) $12000 - $15000
( ) $15000 - $20000
( ) $20000 - $25000
( ) $25000 and over

27. Please indicate the highest level of education completed (circle one year).

A. Never attended school	1
B. Elementary school	1 2 3 4 5 6 7 8
C. High school	1 2 3 4
D. College	1 2 3 4 5 6 or more

28. Occupation_____

APPENDIX B

LINEAR CORRELATION MATRIX OF TIMBER OWNER RESPONSES

TABLE XXX

LINEAR CORRELATION MATRIX OF TIMBER OWNER RESPONSES

Question	Own	Pine	Mixed Pine	Bottomland	Post Oak/B.J.	Use (Binary)	Sell (Binary)	Acresell
Own (1)	1							
Pine (2A)		1						
Mixed Pine (2B)		.523	1					
Bottomland (2C)		-.382	.387	1				
Post Oak/B.J. (2D)			.426	.786	1			
Commercial Use (Binary) (3)						1		
Sell (Binary) (5)		.252	.436	.334	.302	.243	1	
Acresell (7)		.696	.565	-.240	.328			
Distsell (8)		.768	.416	-.368	.158			
Regenerate (Binary) (10A)						.319	.526	
Regenacre (10B)				.371			.184	
TSI.thin (11)		.986	.794	.966			.408	
TSI.fert (11)								
TSI.prune (11)								
TSI.burn (11)		.926		.931	.414		.302	
TSI.herbicide (11)		.850	.611		-.360		.423	
TSI (Binary) (11A)						.445	.332	
Assistance (12)		-.350	-.292		-.155	-.110	.182	
Capital (14)		-.282	-.325			-.076	.114	
Absentee (15)		.332	.489	.324	.211	.213	.180	
Absentee Distance (16)		.835	.381		.374		.478	
Commercial (17)		.440	.204	.151	.333	.323	.486	
Plant (18)	.148	.335	.581	.184	.111	.351.	.372	
Thin (21A)		-.247	.332	.453	.081		.297	
Burn (21B)		.257	.334	-.117	.176	.157	.223	
Fertilize (21C)		-.296	-.240		-.080	-.098		
Roads (21D)	-.080	-.610		.165		-.283	.072	
Clearcut (21E)		.402	.127	-.228		.191	.176	
Fenced (23)		.430					-.117	
Tenure (24)		-.152		.239	-.167			
Acquire (25)								
Income (26)	.178	.370				.223	.176	
Education (27)		.267				.223	.176	
Tacre (28)		.954				.865	.432	

Refer to Table XXXII, Appendix C for variable codes.

All coefficients are significant at least at the .1 probability level, and based on differing degrees of freedom.

TABLE XXX (Continued)

Question	Acresell	Distsell	Regenerate (Binary)	Regenacre	TSI.thin	TSI.fert	TSI.prune	TSI.burn
Own (1)								
Pine (2A)								
Mixed Pine (2B)								
Bottomland (2C)								
Post Oak/B.J. (2D)								
Commercial Use (Binary) (3)								
Sell (Binary) (5)								
Acresell (7)	1							
Distsell (8)	.660	1						
Regenrate (Binary)(10A)			1					
Regenacre (10B)	.506	.427		1				
TSI.thin (11)	.971	.961		.913	1			
TSI.fert (11)						1		
TSI.prune (11)							1	
TSI.burn (11)	.547	.644						1
TSI.herbicide (11)	.473							-.463
TSI (Binary) (11A)			.287					
Assistance (12)	-.283	-.326	.285	.150	-.462			-.544
Captial (14)	-.234	-.299	.162	-.177	-.421			-.289
Absentee (15)	.271	.106	.202	-.283	.532			
Absentee Distance (16)	.606	.563						.925
Commercial (17)	.326		.628		.406			
Plant (18)			.469	.208	.474			
Thin (21A)	-.295	-.305	.128					-.378
Burn (21B)		.299	.091		.438			
Fertilize (21C)	-.178	-.211		.236	-.246			
Roads (21D)	-.205	-.256	-.135	.548	-.416			-.840
Clearcut (21E)	.205	.378	.078	.382.	.382			
Fenced (23)	.340	.549		.424	.427			.892
Tenure (24)	-.229	-.261		-.194				
Acquire (25)								
Income (26)	.292		.265	.205	.621			.456
Education (27)	.169	-.124	.294	.174	.606			.608
Tacre (28)	.706	.623	.467	.161	.987			.731

Refer to Table XXXII, Appendix C for variable codes.

All coefficients are significant at least at the .1 probability level, and based on differing degrees of freedom.

TABLE XXX (Continued)

Question	TSI.herbicide	TSI (binary)	Assistance	Capital	Absentee	Absentee Distance	Commercial Plant		Thin
Own (1)									
Pine (2A)									
Mixed Pine (2B)									
Bottomland (2C)									
Post Oak/B.J. (2D)									
Commercial Use (Binary) (3)									
Sell (Binary) (5)									
Acresell (7)									
Distsell (8)									
Regenerate (Binary) (10A)									
Regenacre (10B)									
TSI.thin (11)									
TSI.fert (11)									
TSI.prune (11)									
TSI.burn (11)									
TSI.herbicide (11)	1								
TSI (Binary) (11A)		1							
Assistance (12)	-.331	-.182	1						
Capital (14)		-.170	.231	1					
Absentee (15)	.403	.182	.107		1				
Absentee Distance (16)				-.158		1			
Commercial (17)	.418	.312	.258	.207	.181	.650	1		
Plant (18)	.470	.445	.367	.113	.171	.401	.573	1	
Thin (21A)	.304	.265	.190		.211	.124	.216	.314	1
Burn (21B)	.203	.152	.104		.082	.310		.102	.245
Fertilize (21C)	-.350		.184						.342
Roads (21D)		.112		-.073		.378	-.177	-.099	.186
Clearcut (21E)	.263	.066				.184		.085	
Fenced (23)	-.217			.172	-.175		-.180	-.189	-.101
Tenure (24)					.086			.067	.134
Acquire (25)									
Income (26)	.430	.327	.139	-.140	.279	.489	.234	.265	.157
Education (27)	-.178	.183	.345	.137	.306	.479	.276	.319	
Tacre (28)	.343	.497		-.128	.317	.879	.447	.400	.124

Refer to Table XXXII, Appendix C for variable codes.

All coefficients are significant at least at the .1 probability level, and based on differing degrees of freedom.

TABLE XXX (Continued)

Question	Burn	Fertilize	Roads	Clearcut	Fenced	Tenure	Acquire	Income	Education	Tacre
Own (1)										
Pine (2A)										
Mixed Pine (2B)										
Bottomland (2C)										
Post Oak/B.J. (2D)										
Commercial Use (Binary) (3)										
Sell (Binary) (5)										
Acresell (7)										
Distsell (8)										
Regenerate (Binary) (10A)										
Regenacre (10B)										
TSI.thin (11)										
TSI.fert (11)										
TSI.prune (11)										
TSI.burn (11)										
TSI.herbicide (11)										
TSI (Binary) (11A)										
Assistance (12)										
Capital (14)										
Absentee (15)										
Absentee Distance (16)										
Commercial (17)										
Plant (18)										
Thin (21A)										
Burn (21B)	1									
Fertilize (21C)	.073	1								
Roads (21D)	.224	.350	1							
Clearcut (21E)	.323	-.132	.178	1						
Fenced (23)				.223	1					
Tenure (24)			-.235		-.104	1				
Acquire (25)										
Income (26)		.102		-.095		.148		1		
Education (27)	.097				-.101	.101		.408	1	
Tacre (28)	.266	.106	-.213	.175	.065			.347	.246	1

Refer to Table XXXII, Appendix C for variable codes.

All coefficients are significant at least at the .1 probability level, and based on differing degrees of freedom.

APPENDIX C

SURVEY RESPONSE CODES AND VARIABLE NAMES GIVEN TO QUESTIONS

TABLE XXXI

SURVEY RESPONSE CODES AND VARIABLE NAMES GIVEN TO QUESTIONS

Question	Units or Code	Variable Name Given
1. Do you own 10 acres or more of timber?		Own
Yes	2	
No	1	
2. Approximately how many acres of your timber holdings fall into the following forest types?		
A. Pine	acres	Pine
B. Mixed Pine & Hardwoods	acres	Mixed Pine
C. Bottomland Hardwoods	acres	Bottomland
D. Post Oak & Blackjack	acres	Post Oak/B.J.
3. Current commercial use of timber:		Use (Binary)
Commercial use	2	
Non-commercial use	1	
4. If you are planning to convert your timberland to another use:		
A. Indicate intended land use category:		Convert
Clear for pasture	1	
Clear for crops	2	
Convert to other forest type	3	
B. Type of timber converting from:		From
Pine	1	
Mixed Pine & Hardwoods	2	
Bottomland Hardwoods	3	
Post Oak & Blackjack	4	
C. Type of timber converting to:		To
Pine	1	
Mixed Pine & Hardwoods	2	
Bottomland Hardwoods	3	
Post Oak & Blackjack	4	

TABLE XXXI (Continued)

Question	Units or Code	Variable Name Given
5. Have you sold any timber in the last 5 years?		Sell (Binary)
Yes	2	
No	1	
6. If you did not sell, what was the reason?		Why not sold
Waiting for higher prices	1	
Timber too small to market	2	
Unfamiliar with potential buyers	3	
Part of Management plan	4	
7. What was the approximate acreage involved in the sale(s)?		Acresell
Acreage	acres	
8. What was the approximate distance in miles from site of sale to the mill or yard of the buyer?		Distsell
Distance	miles	
9. What were the primary physical and economic reasons that you sold your timber?		Physical
A. Primary physical reasons		
Mature timber	1	
Commercial thinning	2	
Convert to other forest type	3	
Clear for grazing or crops	4	
B. Primary economic reasons		Economic
Timber financially mature	1	
Meet current expenses	2	
Need for operating cash	3	
Offered a high price	4	

TABLE XXXI (Continued)

Question	Units or Code	Variable Name Given
10 A. Have you used regeneration techniques?		Regenerate (binary)
Yes	2	
No	1	
10 B. Approximate number of acres regenerated?		Regenacre
Acreage	acres	
11. What was the approximate number of acres on which you carried out the following "Timber Stand Improvement" techniques in the last 5 years?		
Non-commercial thinning	acres	TSI.thin
Fertilization	acres	TSI.fert
Pruning	acres	TSI.prune
Prescribed burning	acres	TSI.burn
Herbicide application	acres	TSI.herbicide
11 A. Have you used "TSI" techniques?		TSI (binary)
Yes	2	
No	1	
12. Do you plan to make use of State, Federal, or industrial forestry assistance programs in the next 5 years?		Assistance
Yes	2	
No	1	
13. Which of the following forestry assistance programs have you used?		Asst. category
State	1	
Private industry	2	
Federal	3	

TABLE XXXI (Continued)

Question	Units or Code	Variable Name Given
14. Have you had any trouble in obtaining capital, at reasonable interest rates, to carry out forest management programs?		Assistance
Yes	2	
No	1	
15. Do you live on, or adjacent to, your forested tract?		Absentee
Yes	1	
No	2	
16. If not, what is the approximate average distance to your timber holdings?		Absentee Distance
Distance	miles	
17. What is the chance that you will begin managing your timberlands for commercial production?		Commercial
0 to 100%	percent	
18. What is the chance that you will plant trees in the next 5 years?		Plant
0 to 100%	percent	
19. If you were to plant trees in the next 5 years; what would be the main purpose?		Reason Plant
Increase land value	1	
Economic returns	2	
Wildlife habitat	3	
Erosion control	4	
20. If you do not plant trees in the next 5 years, what would be the main reason?		Reason not Plant
No suitable land for planting trees	1	

TABLE XXXI (Continued)

Question	Units or Code	Variable Name Given
Other uses giving higher returns	2	
Insufficient captial for planting	3	
Insufficient labor for planting	4	
Insufficient information for planting	5	
Land not in need of regeneration	6	
21. What is your attitude toward the way in which the following current timber management practices in your area are being done?		
A. Thinning:		Thin
SA	5	
A	4	
N	3	
D	2	
SD	1	
B. Prescribe burning:		Burn
SA	5	
A	4	
N	3	
D	2	
SD	1	
C. Fertilization:		Fertilize
SA	5	
A	4	
N	3	
D	2	
SD	1	
D. Logging road construction:		Roads
SA	5	
A	4	
N	3	
D	2	

TABLE XXXI (Continued)

Question	Units or Code	Variable Name Given
SD	1	
D. Clearcutting:		Clearcut
SA	5	
A	4	
N	3	
D	2	
SD	1	
22. What is your opinion of the "Best Management Practices Guidelines" drawn up by Gov. Boren's select committee on natural resources?		Boren
Unfamiliar	1	
SA	2	
A	3	
N	4	
D	5	
SD	6	
23. Is your timber producing land adequately fenced?		Fenced
Yes	2	
No	1	
24. What year was the major portion of your land acquired?		Tenure
Tenure	years	
25. How was the major portion of your land acquired?		Acquire
Purchase	1	
Homestead	2	
Inheritance	3	
26. Please indicate the level of annual household income:		Income
Less than $5000	1	
$5001 - $7000	2	

TABLE XXXI (Continued)

Question	Units or Code	Varible Name Given
$7001 - $9000	3	
$9001 - $12000	4	
$12001 - $15000	5	
$15001 - $20000	6	
$20001 - $25000	7	
$25001 and more	8	
27. Please indicate the highest level of education completed:		Education
A. Never attended school	1	
B. Elementary school (1 - 11 yrs.)	2	
C. High School (Grad.-1 yr. of college)	3	
D. College (2 or more yrs.)	4	
28. Total timber acres owned:	acres	Tacre

APPENDIX D

DOCUMENTATION FOR SURVEY DATA SET

1. There are 330 cases (observations) in the data set.

2. There are three computer cards per case.

3. Missing values (or not applicable) are designated by -1.

4. All data is right justified.

5. Some variable scaling differences exist between information presented in this appendix and Appendix C. In analyzing the data it was evident that inverting some scales would make the interpretation of some statistics more clear.

FIRST CARD OF CASE

Column(s)	Question (Variable)	Codes
1-2	Question #1	1 - Yes 2 - No
3-7	Question #2A	acres
8-12	Question #2B	acres
13-17	Question #2C	acres
18-22	Question #2D	acres
23-27	Question #3	1 - Grazing Livestock 2 - Production of Wood 3 - Erosion Control 4 - No Use 5 - Investment in Land
28-30	Question #4A	1 - Clear for Pasture 2 - Clear for Crops 3 - Convert to Other Forest
31-34	Question #4B	1 - Pine 2 - Mixed Pine 3 - Bottomland Hardwoods 4 - Post oak/blackjack
35-38	Question #4C	Same as in Question #4B
39-40	Question #5	1 - Yes 2 - No

Column(s)	Question (Variable)	Codes
41-45	Question #6	1 - Waiting for Higher Prices 2 - Timber too Small 3 - Unfamiliar with Buyers 4 - Market not Available 5 - Part of Management Plan
46-49	Question #7	acres
50-52	Question #8	miles
53-56	Question #9A	1 - Mature Timber 2 - Commercial Thinning 3 - Convert to Other Forest Type 4 - Clear for Grazing or Crops
57-60	Question #9B	1 - Timber Financially Mature 2 - To Meet Current Expenses 3 - Need Operating Cash 4 - Offered High Price
61-65	Question #10A	1 - Hand Planting 2 - Machine Planting 3 - Seeding 4 - Natural Regeneration
66-70	Question #10B	acres
71-74	Question #11, Non-commercial Thinning	acres
75-76	Blank	
77-80	First Card Respondent Reference Number	

SECOND CARD OF CASE

Column(s)	Question (Variable)	Codes
1-4	Question #11, Fertilization	acres
5-8	Question #11, Pruning	acres
9-12	Question #11, Prescribed Burning	acres
13-16	Question #11, Herbicide Application	acres
17-18	Question #12	1 - Yes 2 - No
19-21	Question #13	1 - State 2 - Private Industry 3 - Federal
22-23	Question #14	1 - Yes 2 - No
24-25	Question #15	1 - Yes 2 - No
26-28	Question #16	miles
29-31	Question #17	0 to 100 percent
32-34	Question #18	0 to 100 percent
35-38	Question #19	1 - Increase Land Value 2 - Economic Returns 3 - Wildlife Habitat 4 - Erosion Control

Column(s)	Question (Variable)	Codes
39-44	Question #20	1 - No Suitable Land for Planting Trees 2 - Other Uses with Higher Returns 3 - Insufficient Capital 4 - Insufficient Labor 5 - Insufficient Information 6 - Land Not in Need of Regeneration
45-46	Question #21A	1 - Strongly Agree 2 - Agree 3 - Neutral or Undecided 4 - Disagree 5 - Strongly Disagree
47-48	Question #21B	Same as in Question #21A
49-50	Question #21C	Same as in Question #21A
51-52	Question #21D	Same as in Question #21A
53-54	Question #21E	Same as in Question #21A
55-56	Question #22	1 - Unfamiliar 2 - Strongly Agree 3 - Agree 4 - Neutral or Undecided 5 - Disagree 6 - Strongly Disagree
57-58	Question #23	1 - Yes 2 - No
59-60	Question #24	Year (19___)
61-63	Question #25	1 - Purchase 2 - Homestead 3 - Inheritance

Column(s)	Question (Variable)	Codes
64-71	Question #26	1 - Less than $5000 2 - $5001 to $7000 3 - $7001 to $9000 4 - $9001 to $12000 5 - $12001 to $15000 6 - $15001 to $20000 7 - $20001 to $25000 8 - $25001 and over
72-75	Question #27	1 - Never Attended School 2 - Grades 1 to 8 3 - Grades 9 to 12 4 - 1 to 6 years of College
76	Blank	
77-80	Second Card Respondent Reference Number	

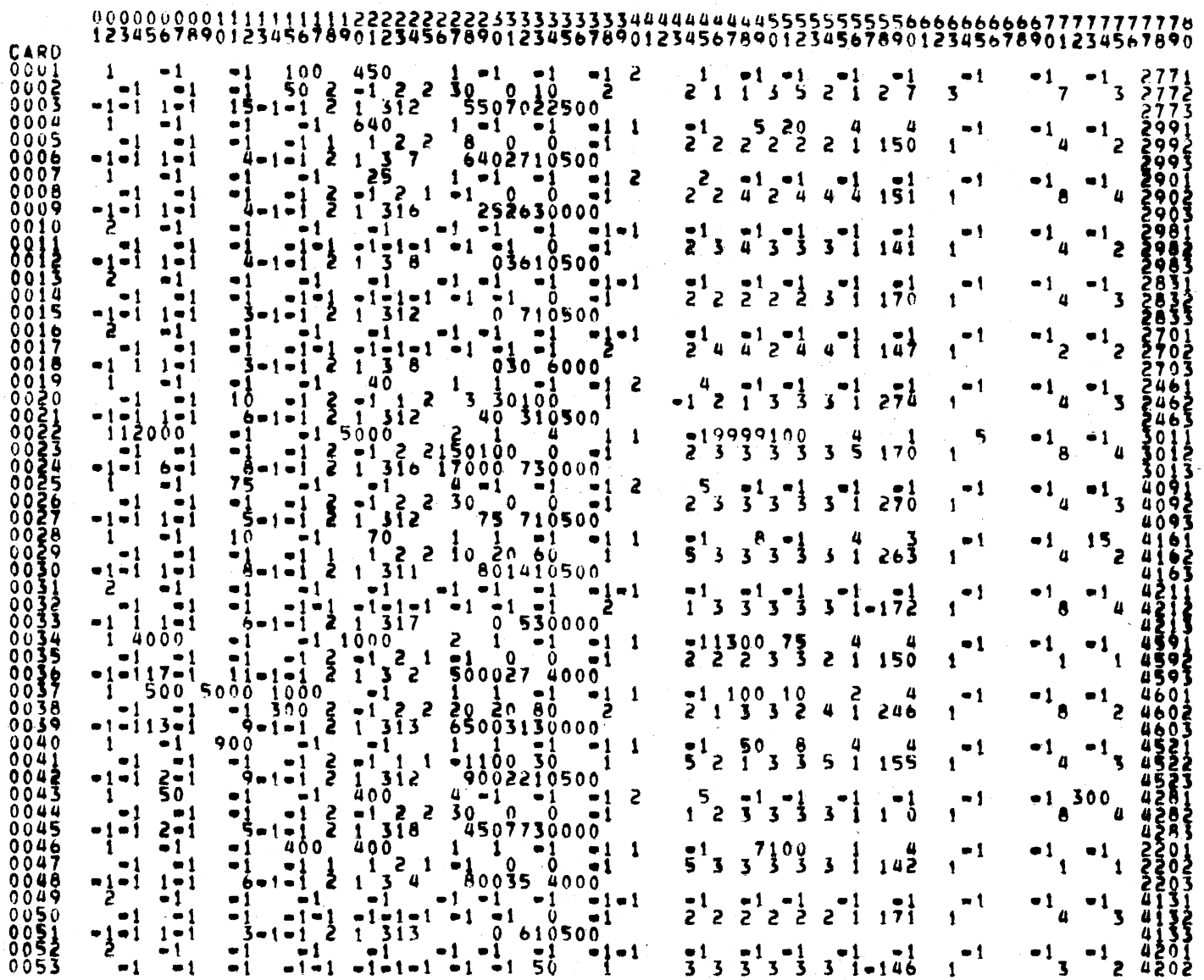
THIRD CARD OF CASE

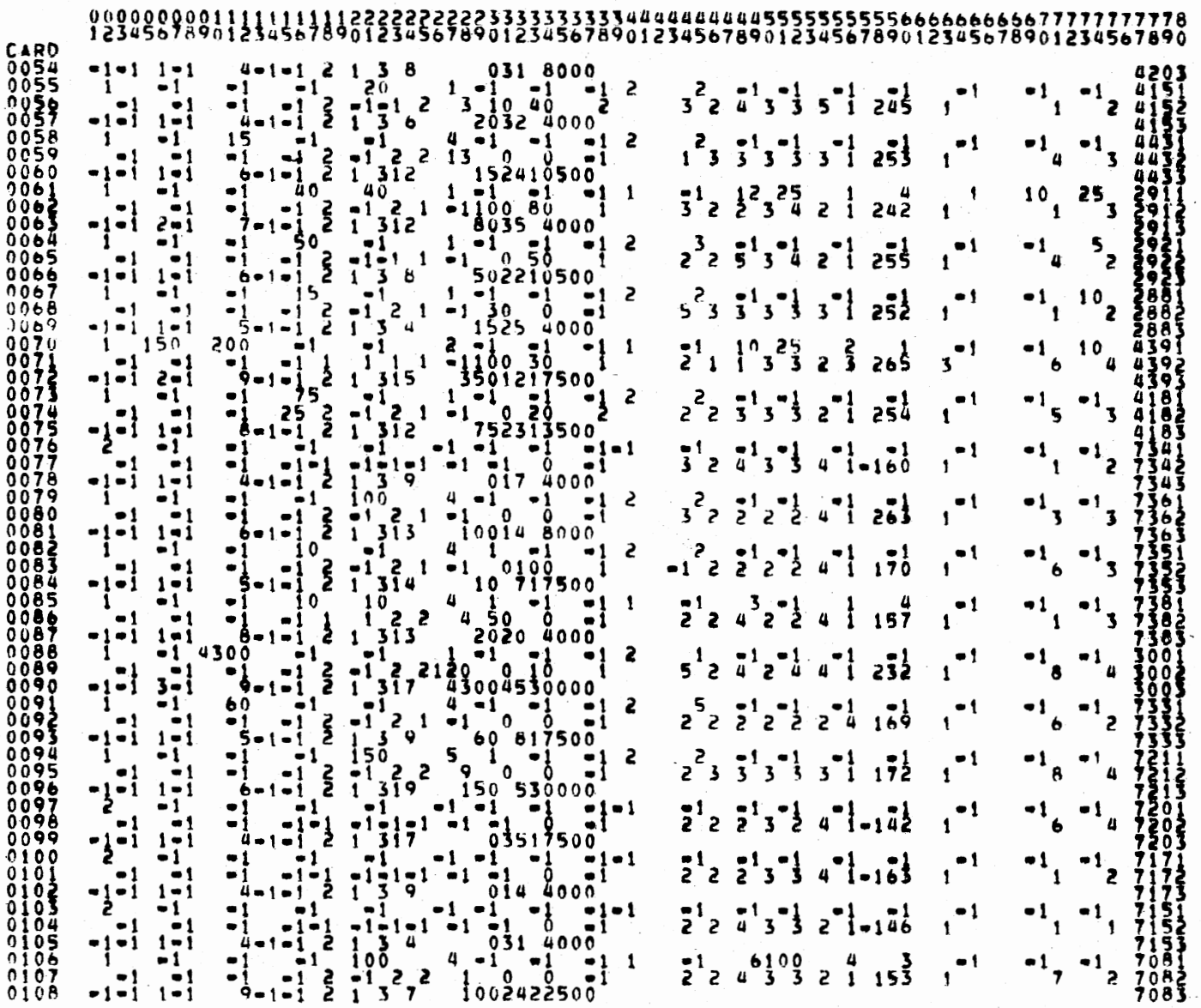
Column	Question (Variable)	Codes
1-2	Undecided on Question #17	1
3-4	Undecided on Question #18	1
5-6	Respondent Weighting Factor	
7-8	Respondent Would Not Give Name on Mail Survey	1 - Would Give Name 2 - Would Not Give Name
9-12	Time of Phone Survey Call	Minutes and Tenths of Seconds
13-14	Undecided on Question #7	1

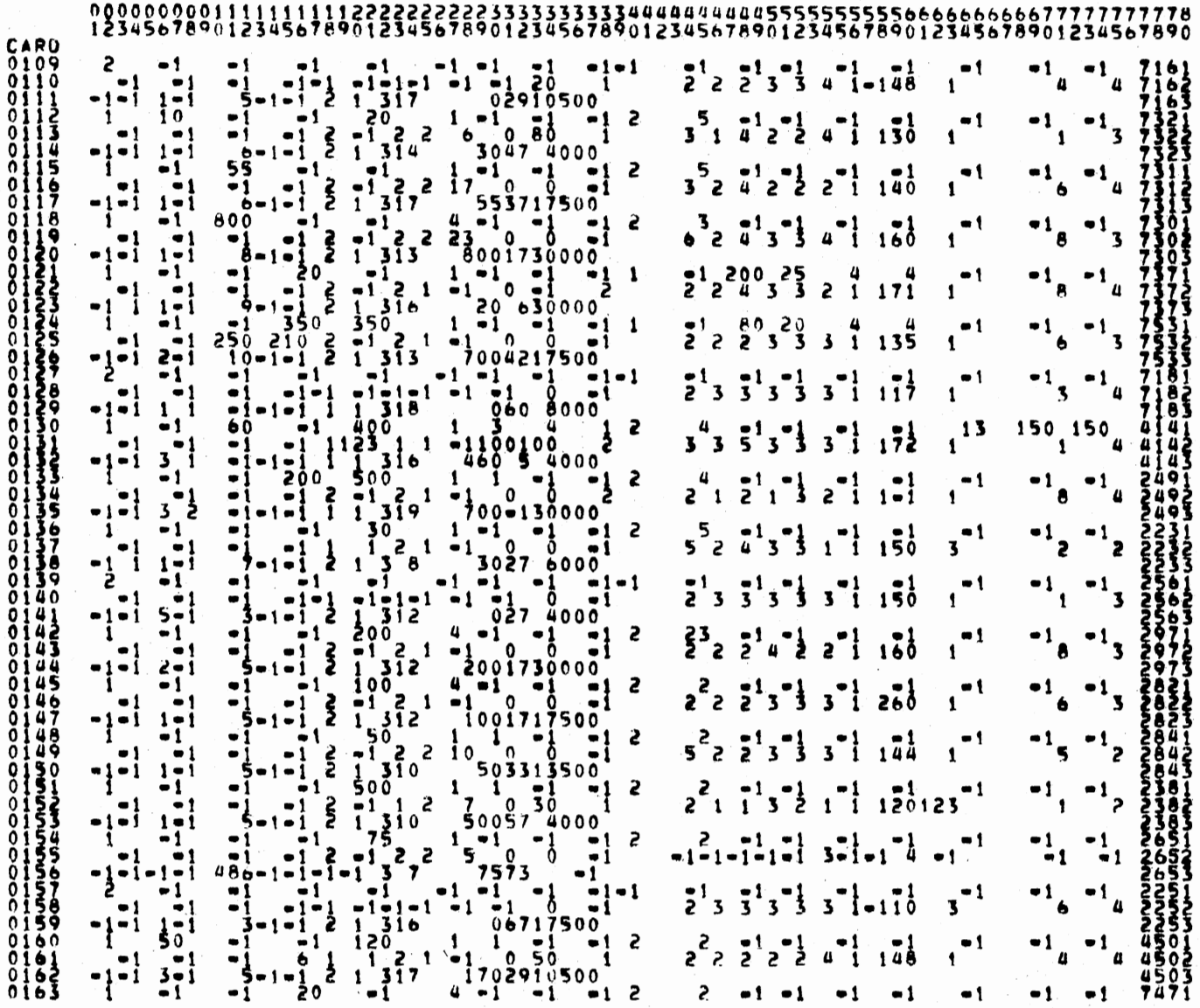
Column(s)	Question (Variable)	Codes
15-16	No Idea on Question #2	1
17-18	Mail or Phone Respondent	1 - Mail 2 - Phone
19-20	Oklahoma Residency	1 - Resident 2 - Non-resident
21-22	Group #	
23-24	Education	1 to 19 years
25-30	Total Timber Owned	acres
31-32	Land Tenure	years
33-37	Income	Means of Categories in Question #26
38-76	Blank	
77-80	Third Card Respondent Reference Number	

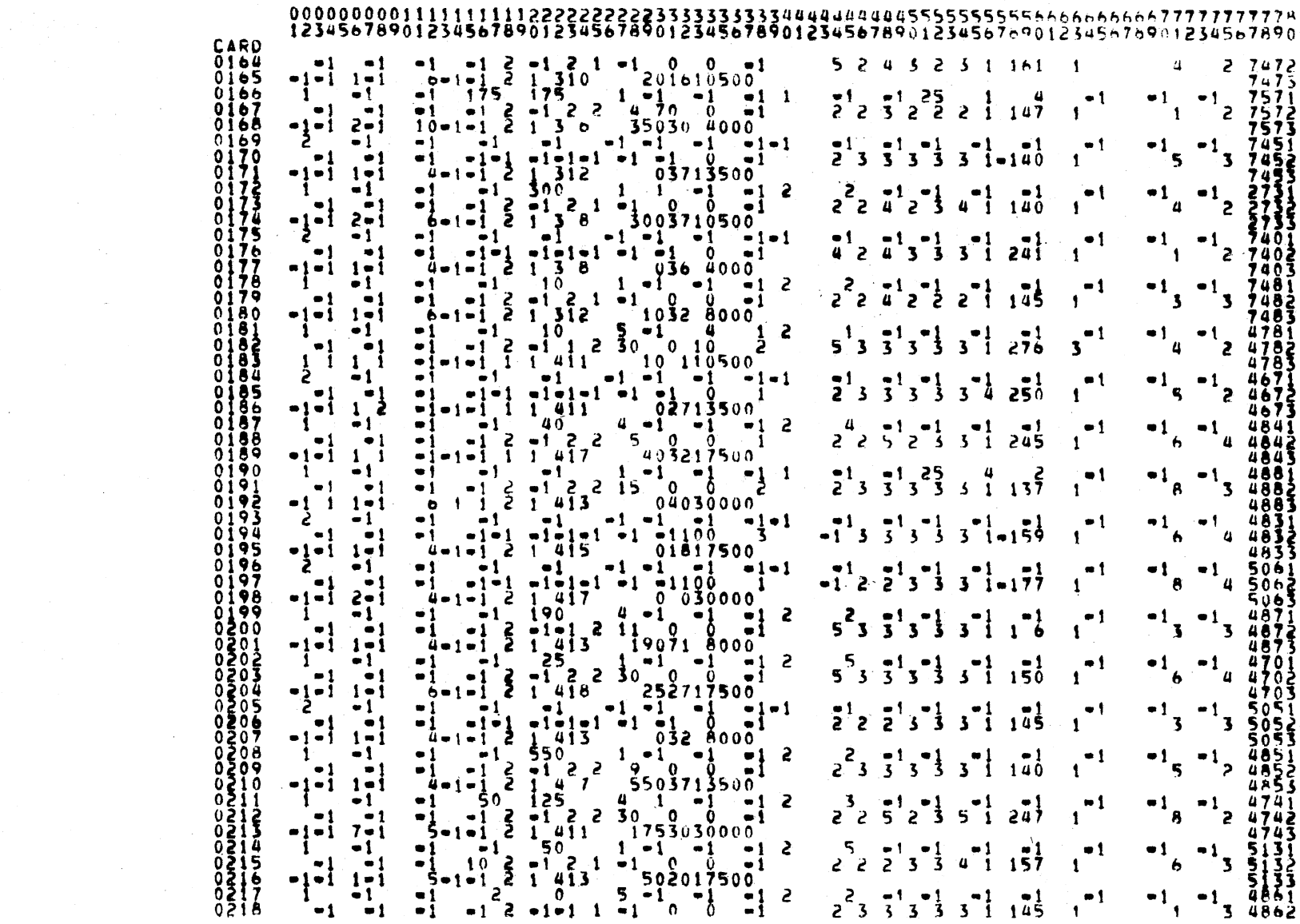
APPENDIX E

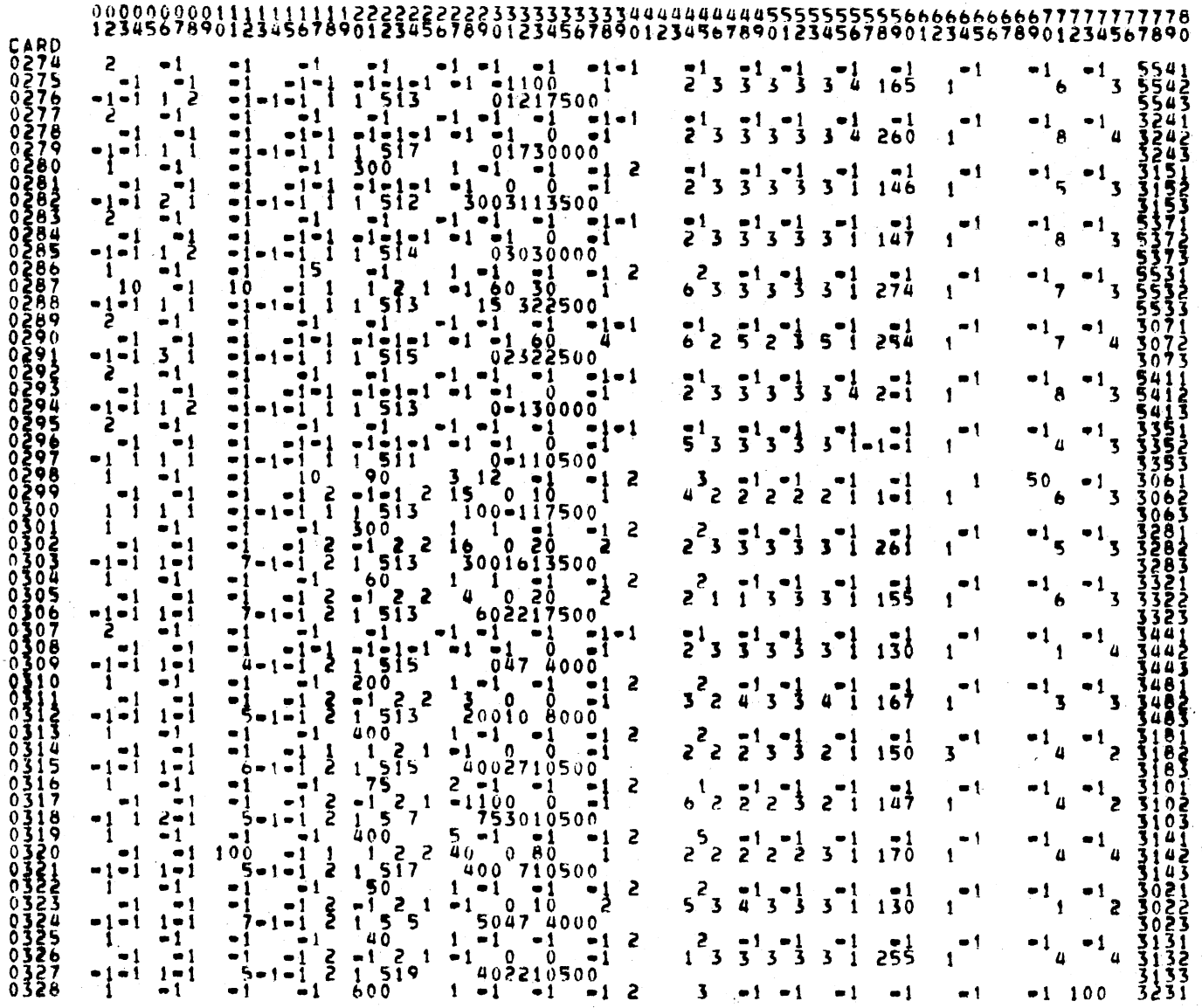
SURVEY DATA SET

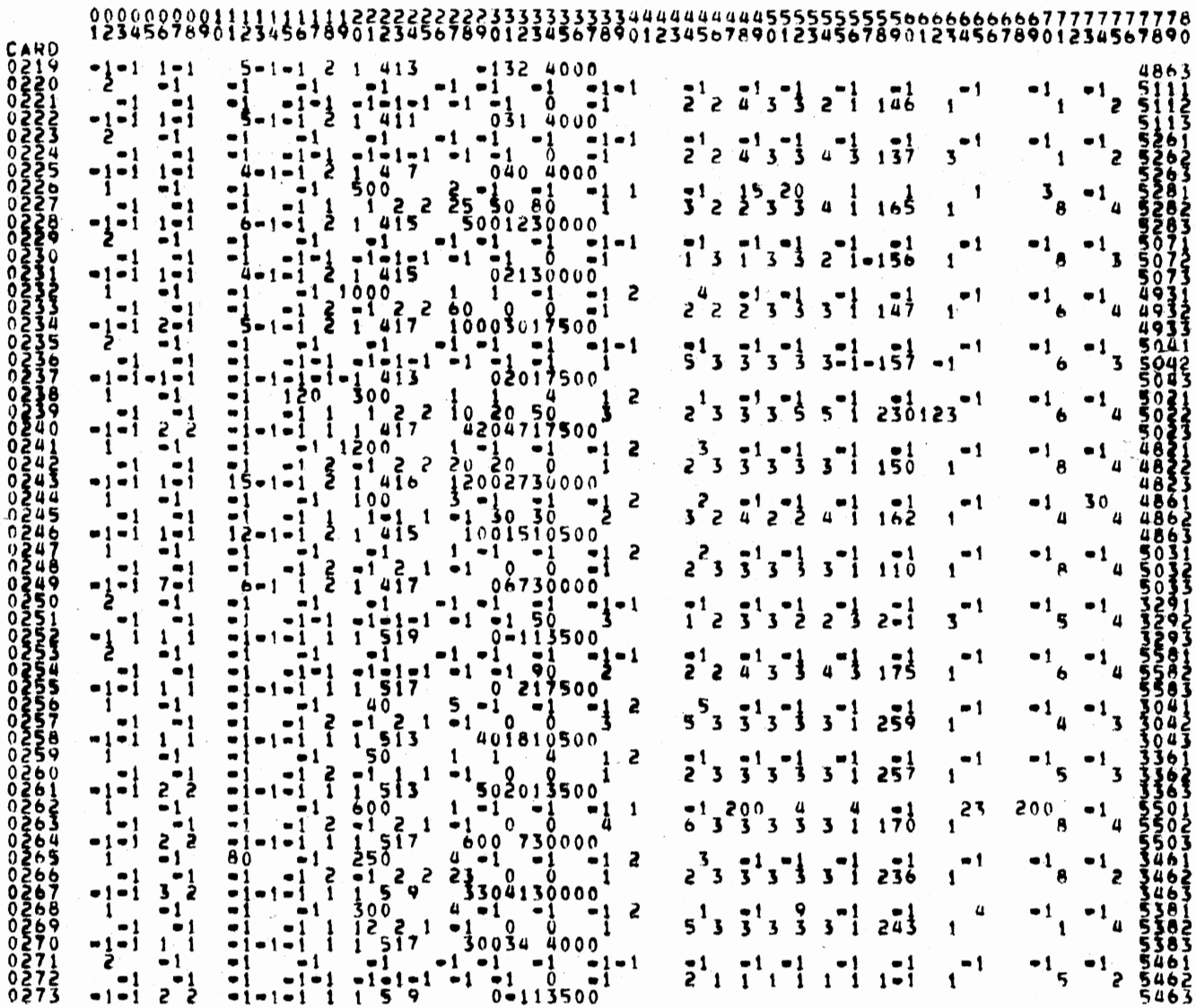


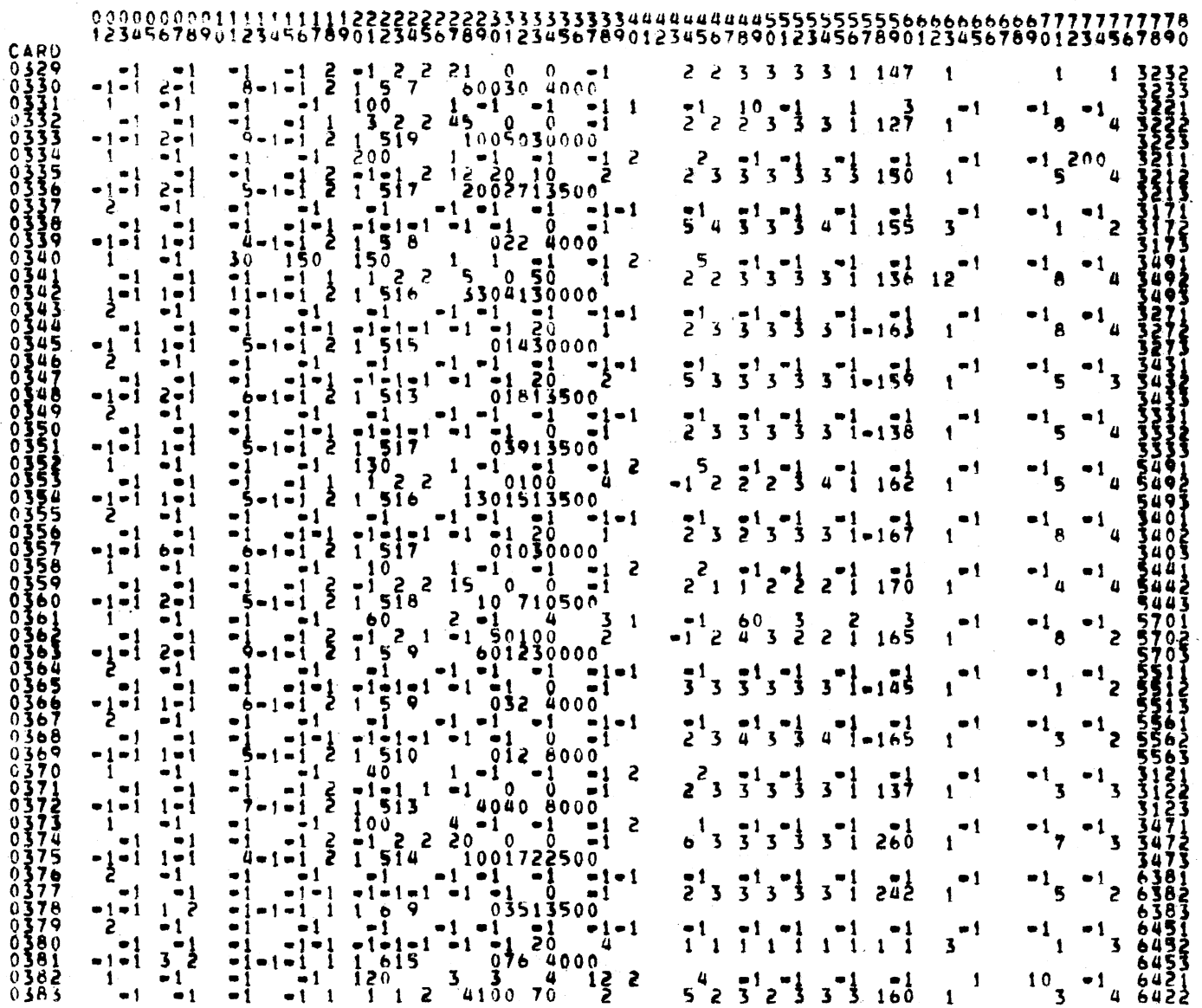


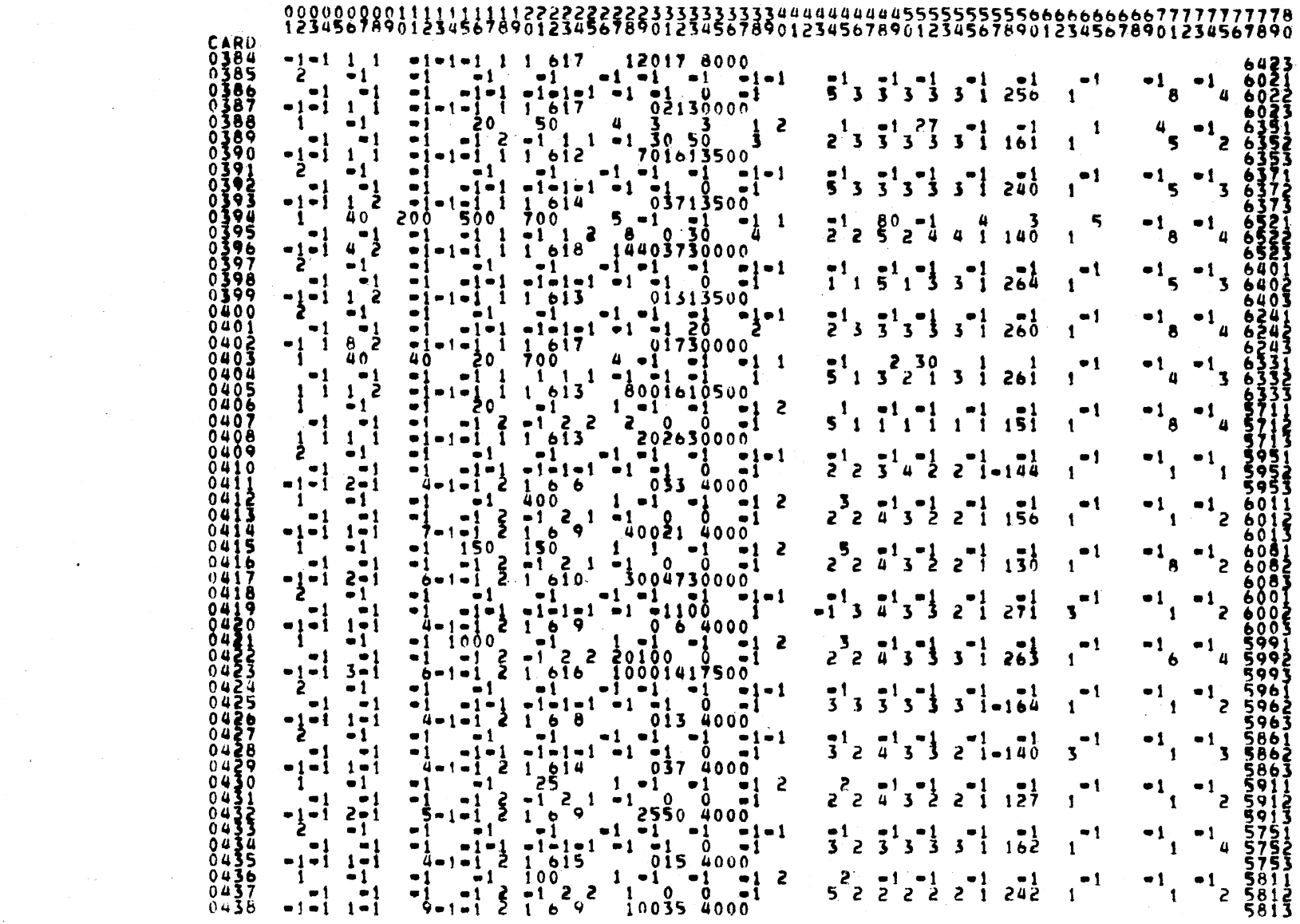


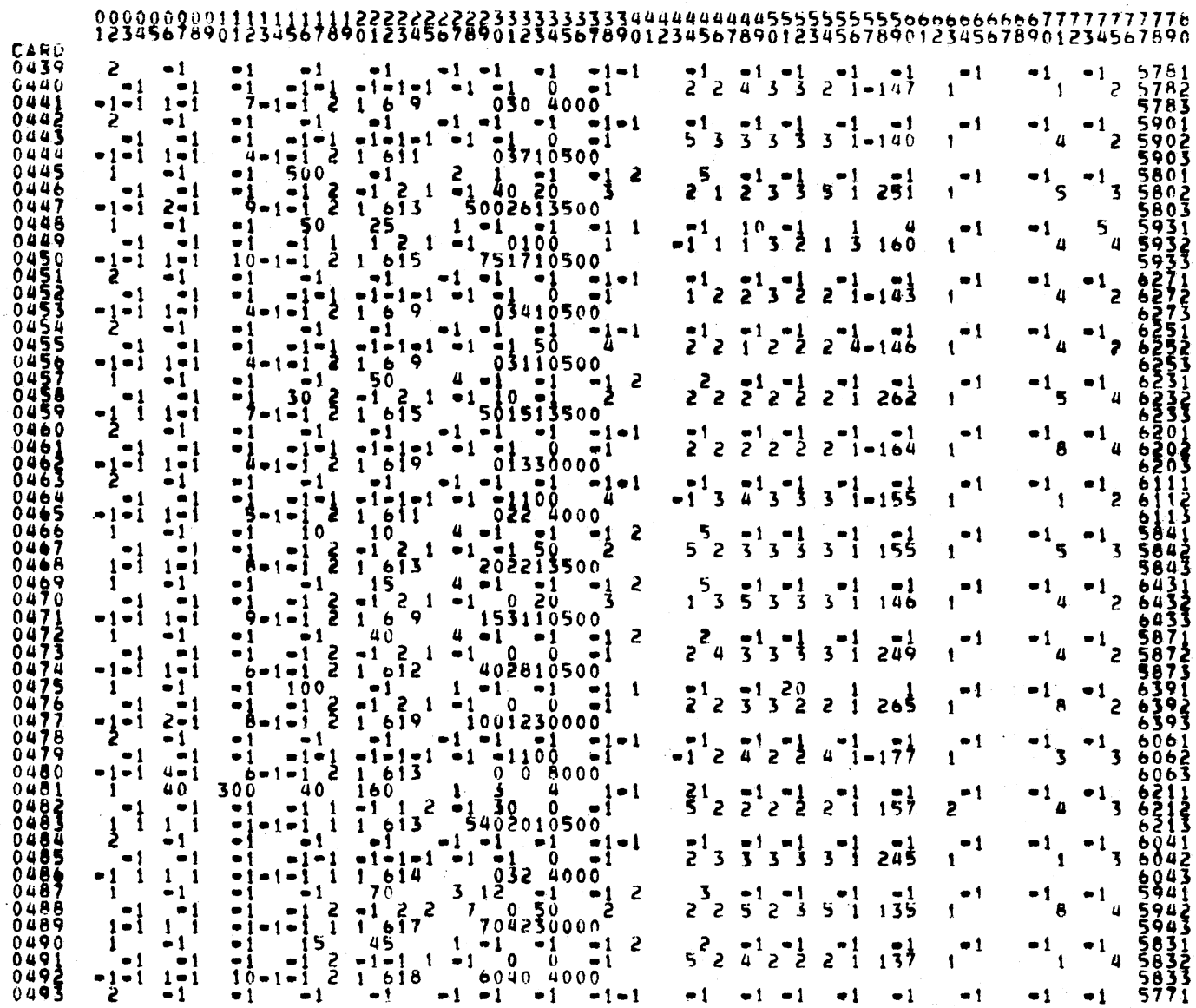


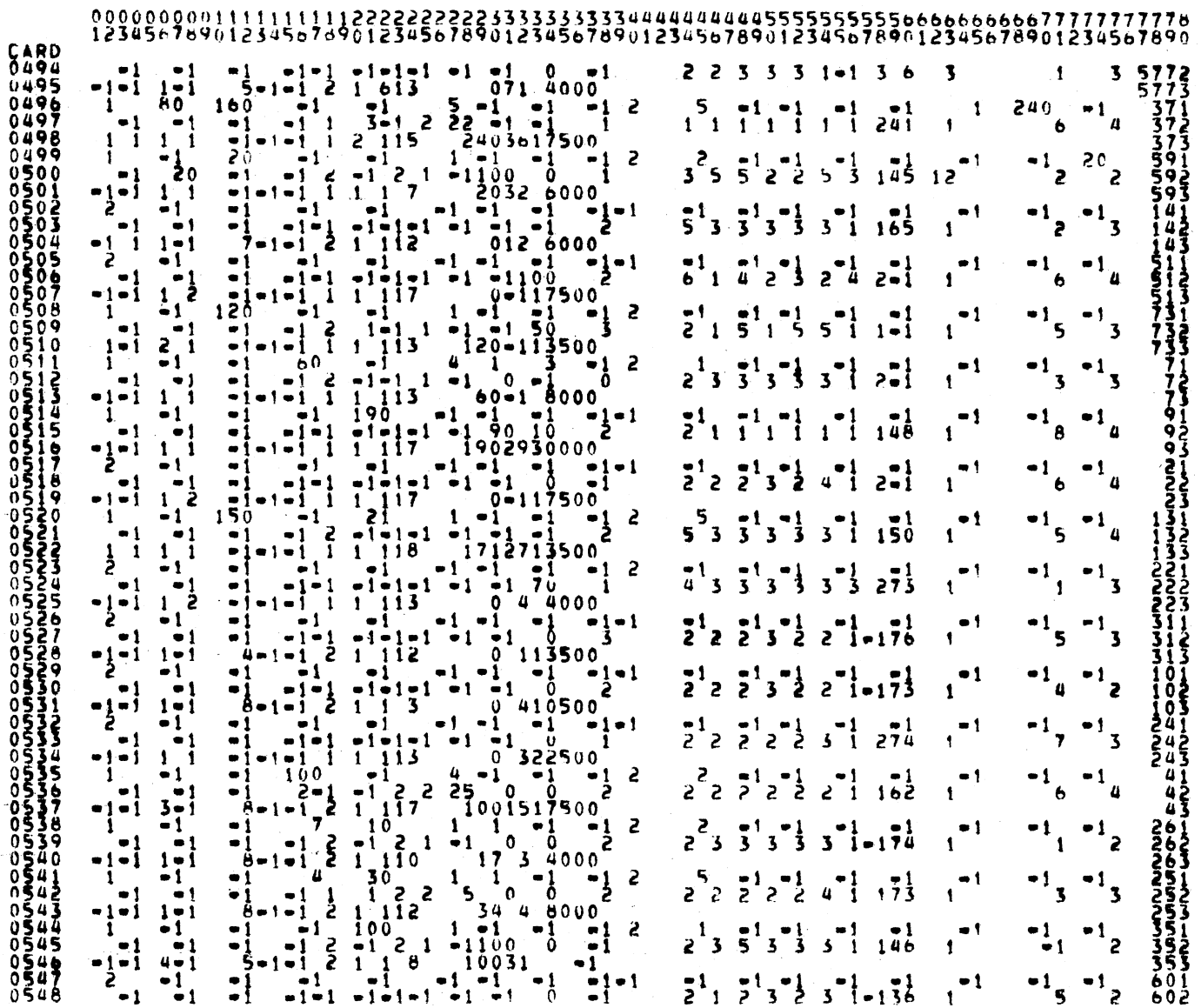


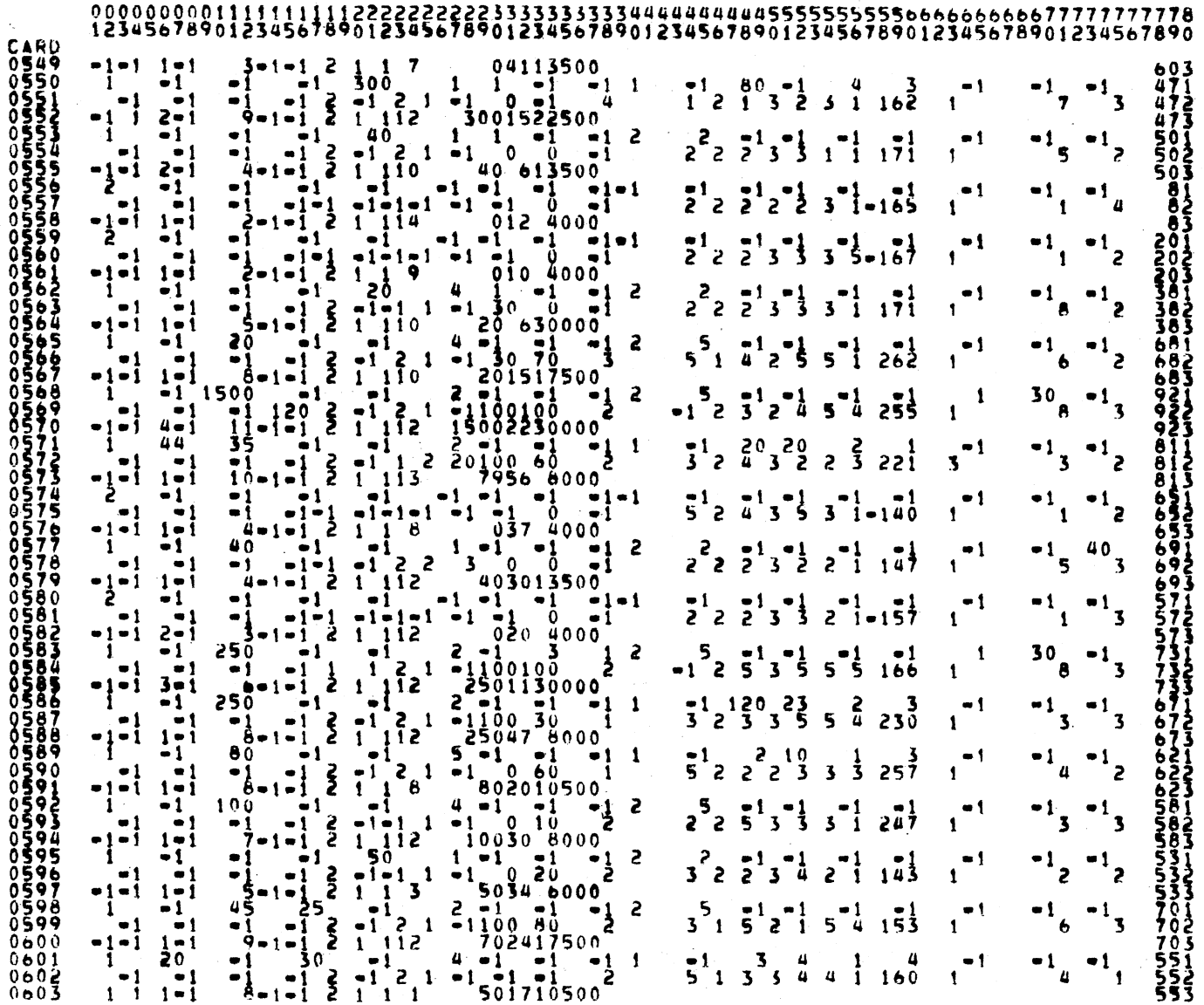


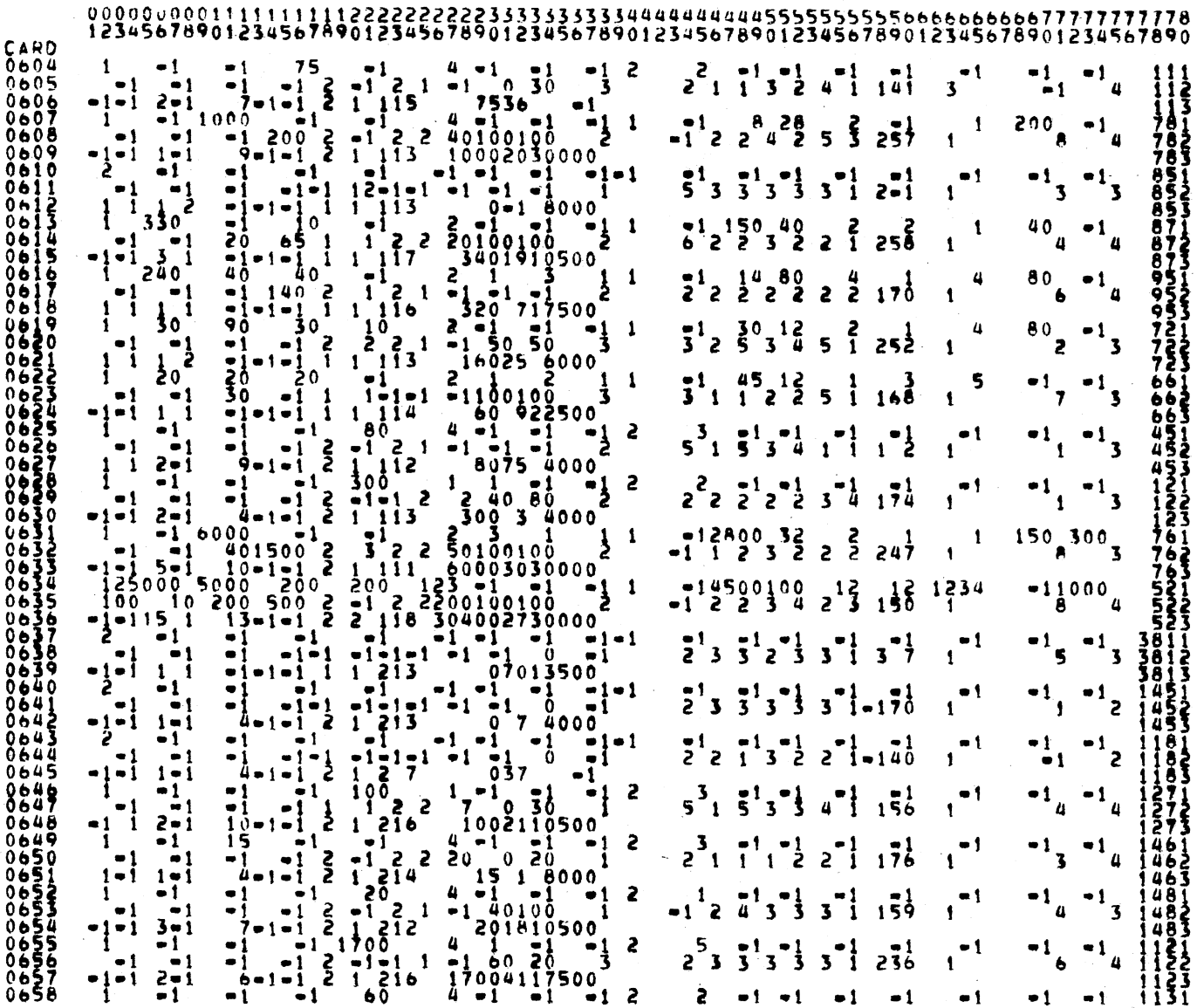


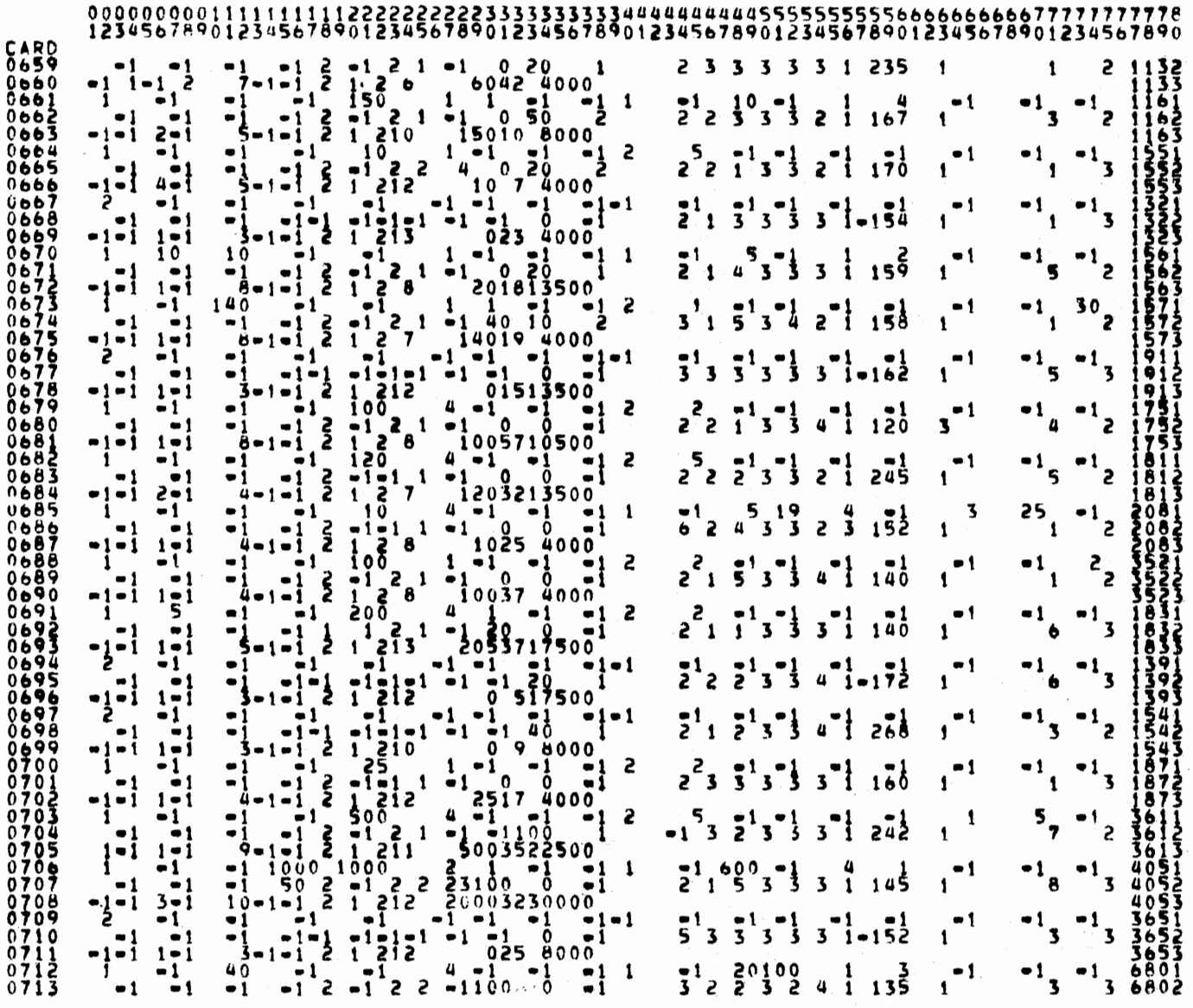


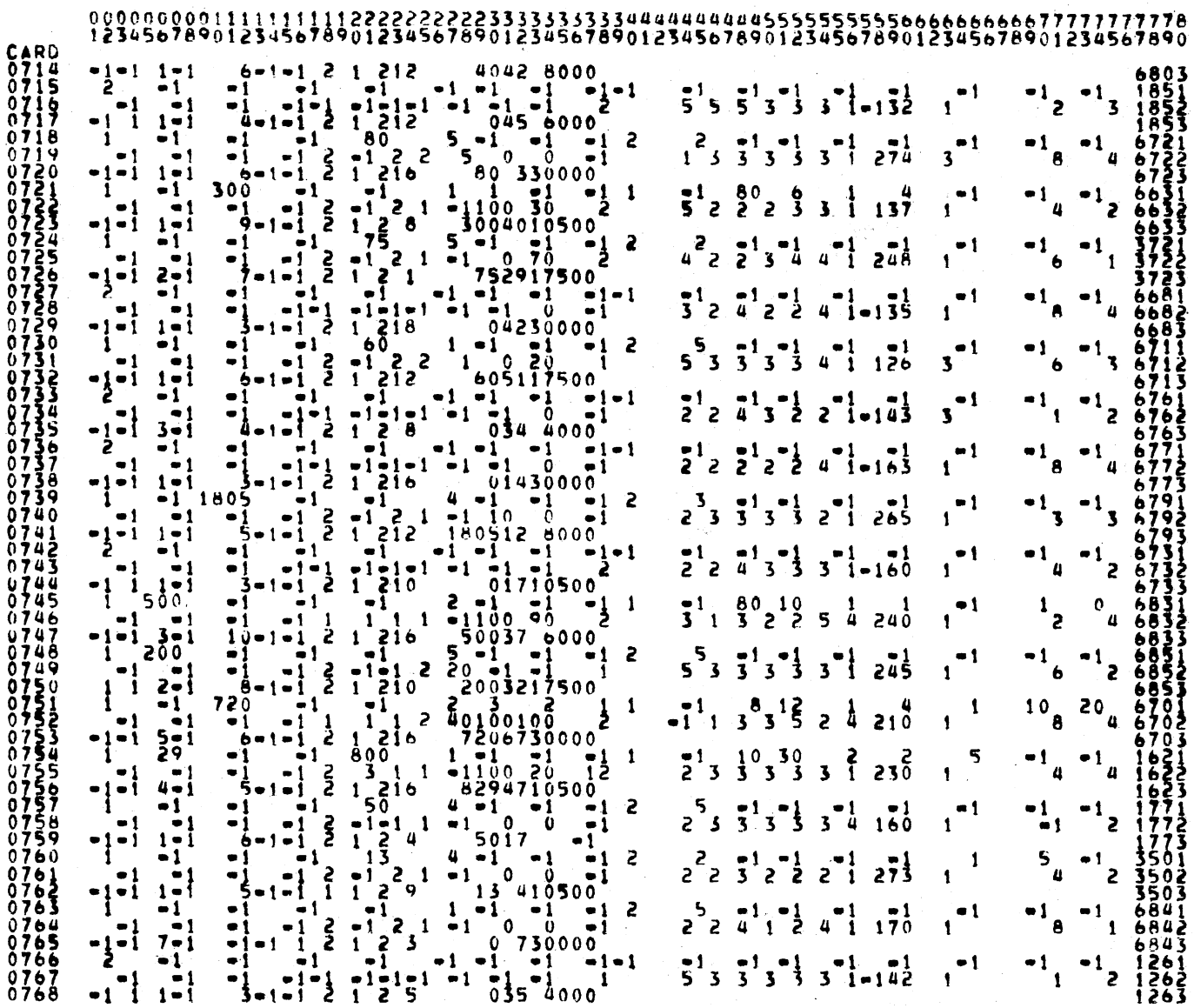


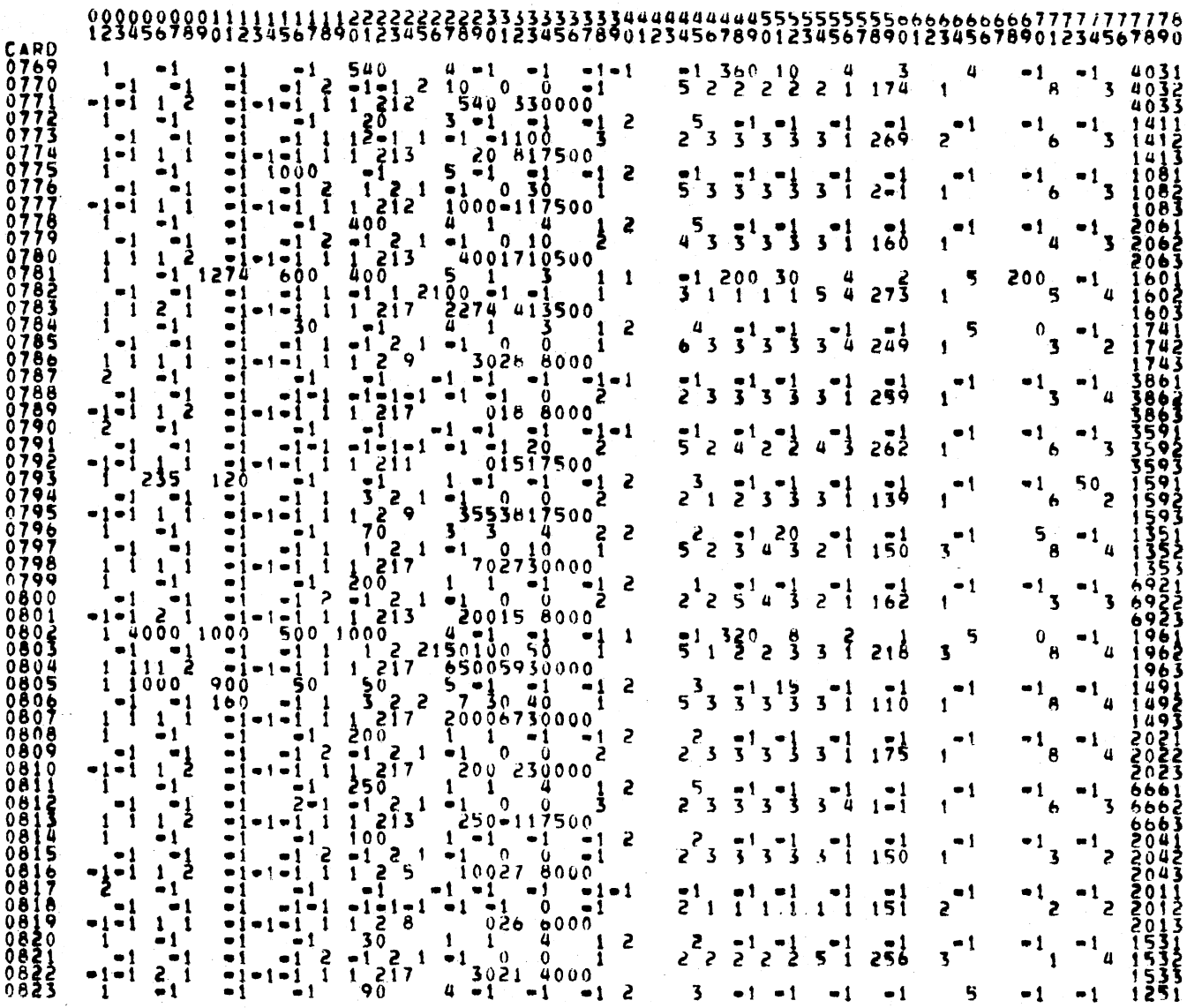


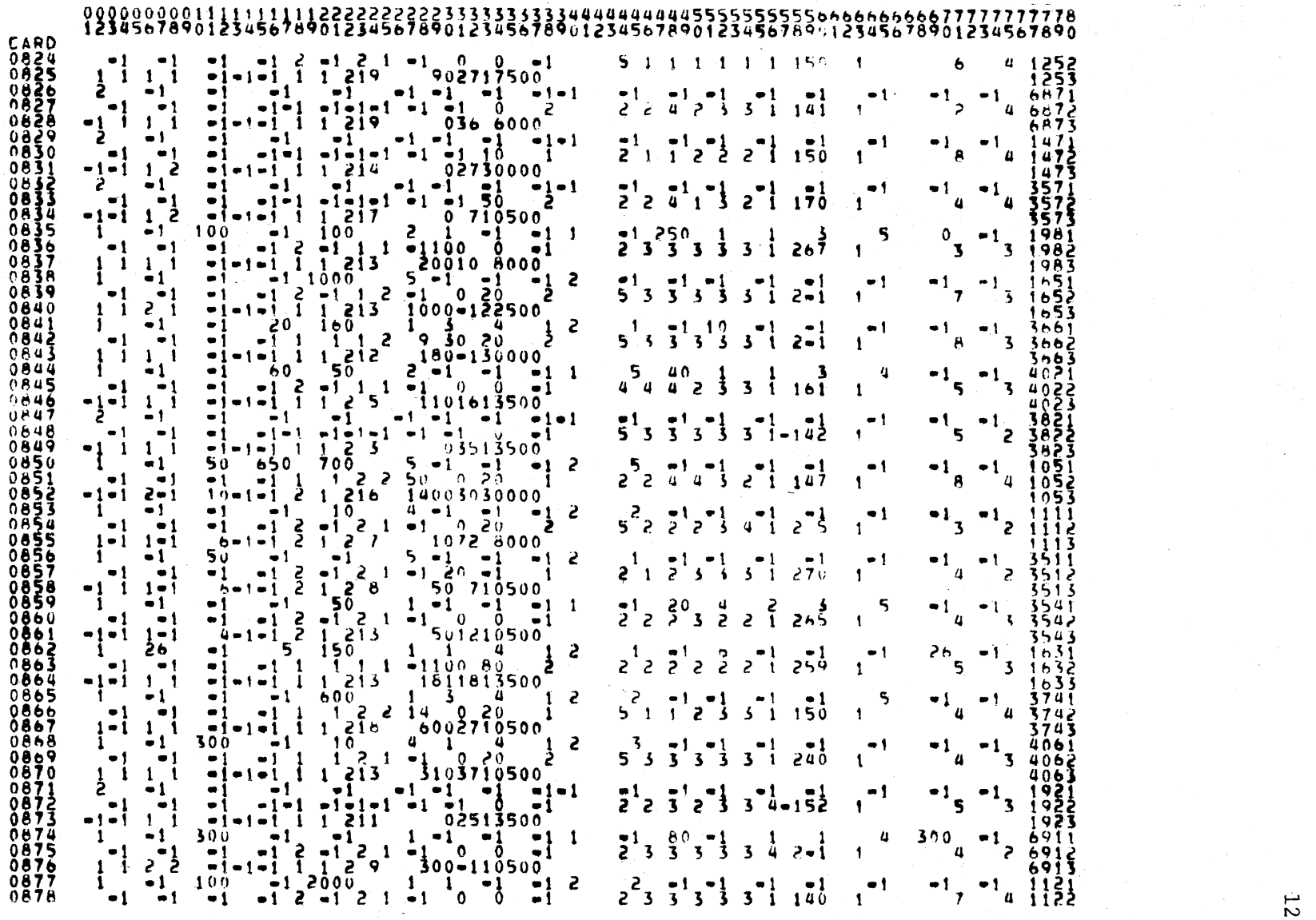


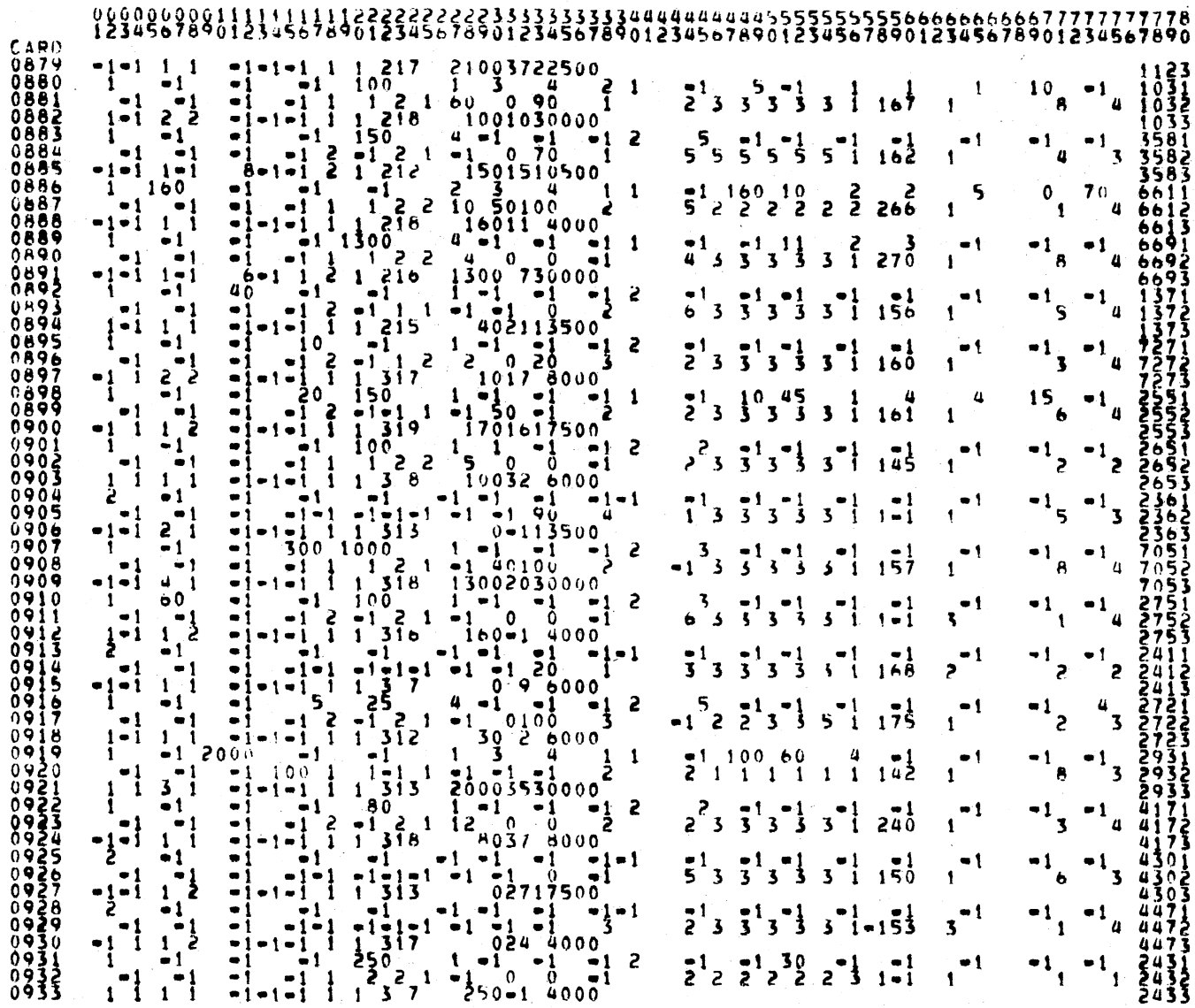


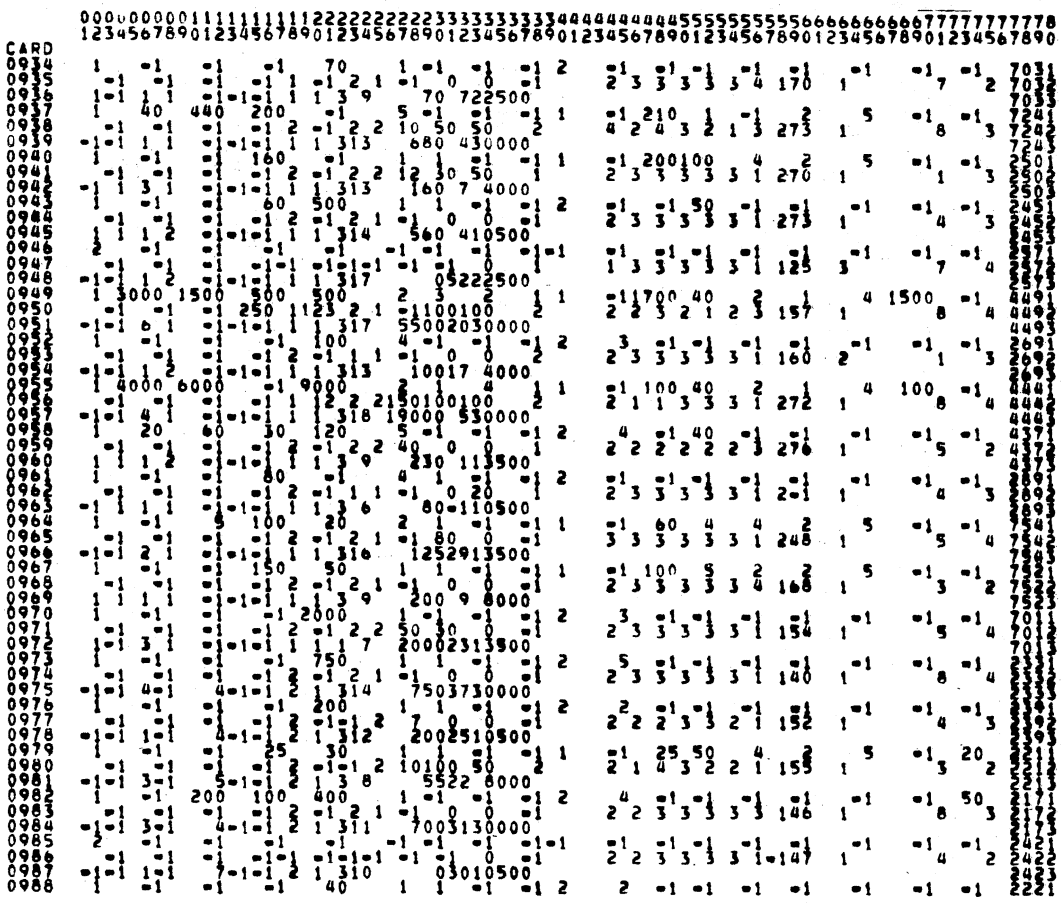


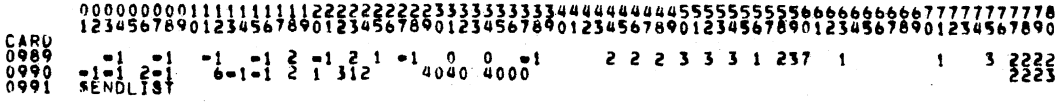












VITA 2

Richard Powell Thompson

Candidate for the Degree of

Master of Science

Thesis: FOREST MANAGEMENT CHARACTERISTICS, ATTITUDES, AND OBJECTIVES OF PRIVATE NON-INDUSTRIAL LANDOWNERS IN EASTERN OKLAHOMA

Major Field: Forest Resources

Biographical:

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Education: Graduated from Putnam City High School, Oklahoma City, Oklahoma, in May, 1970; received Bachelor of Science degree in Forest Management from Oklahoma State University in 1974; completed requirements for the Master of Science degree at Oklahoma State University in July, 1978.

Professional Organizations: Xi Sigma Pi honorary forestry society, Society of American Foresters, and the American Forestry Association.